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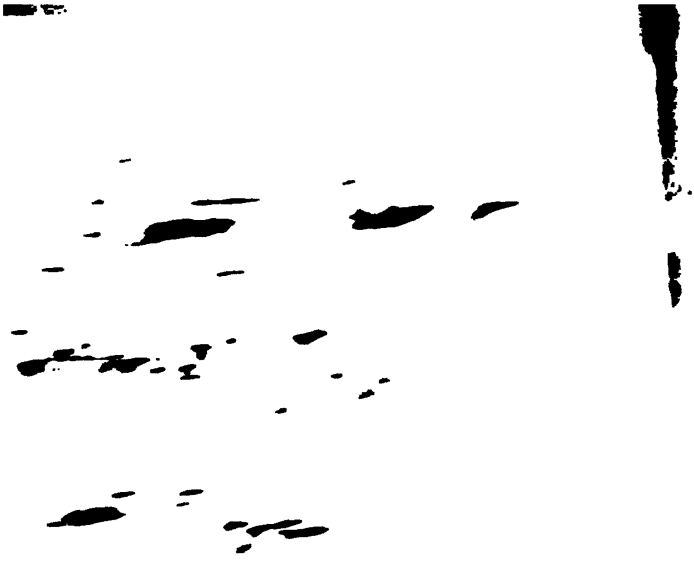
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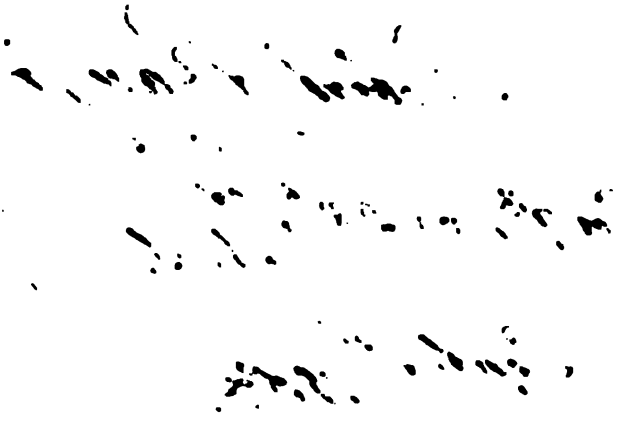
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Robert Rapp

(on 9th Nov 28th N.Y.H.)

Sept. 1st 1854



THE

# HISTORY, DIAGNOSIS, AND TREATMENT

OF THE

# FEVERS

OF THE

# UNITED STATES.



THE

# HISTORY,

# DIAGNOSIS, AND TREATMENT

OF THE

# FEVERS

OF THE

# UNITED STATES.

BY ELISHA BARTLETT, M. D.,

PROFESSOR OF MATERIA MEDICA AND MEDICAL JURISPRUDENCE IN THE COLLEGE OF PHYSICIANS AND SURGEONS OF THE UNIVERSITY OF THE STATE OF NEW YORK;
MEMBER OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES;
AUTHOR OF AN ESSAY ON THE PHILOSOPHY OF MEDICAL SCIENCE, ETC. ETC.

THIRD EDITION, REVISED.

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1852.

D

All diseases, then, ought to be reduced to certain and determinate kinds, with the same exactness as we see it done by botanic writers in their treatises of plants. For there are diseases that come under the same *genus*, bear the same name, and have some symptoms in common, which, notwithstanding, being of a different nature, require a different treatment. . . . . In writing, therefore, a history of diseases, every philosophical hypothesis, which hath prepossessed the writer in its favor, ought to be totally laid aside, and then the manifest and natural phenomena of diseases, however minute, must be noted with the utmost accuracy, imitating in this the great exactness of painters, who, in their pictures, copy the smallest spots or moles in the originals.—*Sydenham.*

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PHILADELPHIA:

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1852

TO

JOHN ORNE GREEN, M. D.,

OF LOWELL, MASSACHUSETTS;

With whom the early and active part of the writer's life was passed; in a personal friendship which no cloud, for a single moment, ever shadowed or chilled; and in a professional intercourse whose delightful harmony no selfish interest nor personal jealousy ever disturbed; this volume, the best materials for which were gathered during the period thus consecrated by useful labors and social duties, and now endeared to us both by many sad and pleasant memories, is most affectionately inscribed.

NOVEMBER 1, 1847.

# PREFACE TO THE THIRD EDITION.

I HAVE very little to say in sending to the press this third edition of my book on fevers, but to express my obligations to the profession of the United States for the very favorable reception which they have given to it. The general literature of fevers has, with one eminent exception, received no very important contributions since the date of the preceding Preface. The exception to which I refer, consists in a series of papers published within the last year or two by Dr. William Jenner, of London. Their leading purpose is to show by careful and rigorous study and comparison the wide and fundamental differences which the author believes to exist between the several forms, as they have generally been regarded, of continued fever, and especially between the *typhoid* and the *typhus* forms. Dr. Jenner's researches have enabled me to add largely to the fulness and completeness of the description of typhus fever; and I have availed myself liberally of his facts and arguments in elucidation of the important question of the true relations to each other of the two great forms, or species, of continued fever.

I have given no account of the *Relapsing Fever* of Great Britain, as I do not know that it has ever been met with in the United States.

COLLEGE OF PHYSICIANS AND SURGEONS,
NEW YORK, *June* 1, 1852.




# PREFACE TO THE SECOND EDITION.

It will be seen by those who have read the first edition of my book on fevers that the present is in some respects rather a new work than a new edition of the former. The History of Typhoid and of Typhus Fever remains much in the same state in the present as in the first edition, with such additions and developments only as further observation and study have enabled me to make. The History of Periodical, and of Yellow Fever, constituting one-half of the volume, has been added to the present edition; thus rendering the work what it professes to be, a Systematic and Methodical Treatise on the Fevers of the United States.

November 1, 1847.

# PREFACE TO THE FIRST EDITION.

I HAVE written this book, because I thought that I saw a want in medical literature which it might supply. Our science, so far as the great subject of idiopathic fevers is concerned, is passing through a transition period; and many authorities, that were received as standard and classical only a few years ago, are fast becoming obsolete, at least for American readers. This is particularly true of the leading English treatises on Fever. Neither the works of Fordyce, Armstrong, Southwood Smith, nor Tweedie, nor the elaborate articles on Fever in the Medical Cyclopedias, Libraries, and Dictionaries, can henceforth be regarded as sufficient or even safe guides for American practitioners; and the remark is applicable to them, not because they are not works of great excellence and value, but for other reasons, which will be abundantly obvious in the course of the following pages. I may simply say, here, that their authors describe principally a fever or form of fever which is rarely met with in this country, and that they do not represent the actual state of our knowledge upon this subject. It must be regarded as especially unfortunate that, until within a few years, the greater part of our information relating to continued fever, has been derived from writers who have treated mostly, and under the same name as that generally used by ourselves, of a disease, or form of disease, differing in many

important respects from that which is most common with us, and that in this way so great a degree of confusion has been introduced into our notions of fever.

If the radical defect in our literature of continued fever thus indicated had not existed, and if the histories of the disease which have been given to us by Louis, Chomel, and Andral amongst the French, and by Nathan Smith, Dr. James Jackson, Dr. Hale, and some others amongst ourselves, were generally accessible, and generally read, there would have been no want such as I have alluded to; and, certainly, I should not have added another to the long catalogue of books on fever. A translation, by Dr. Bowditch, of Louis's *Researches*, was published a few years ago under the auspices of the Massachusetts Medical Society, and has since been in the hands of most of its Fellows. But it is very far from being so generally and thoroughly known as it deserves to be. I may add, that the character of this remarkable work is hardly adapted to the actual wants and tastes of the great majority of our practical men. I may say this, I think, without any risk of giving offence; for no man's admiration of this work can be more unqualified and profound than my own. Constituting as it does one of the few imperishable monuments that have from time to time, and at distant intervals, been raised up along the pathway of our science, it is nevertheless true that, in the present state of the profession in this country—amidst the daily cares and duties of its active members—there are but few who will devote to this object the time and the labor which are necessary thoroughly to comprehend its principles and to master its accurate and minute details. Chomel's *Clinical Lectures*, so far as I know, have not been published here; Nathan Smith's *Essay*, excellent as it is, is still very incomplete; and the *Reports* of Dr. Jackson and Dr. Hale, besides not professing to treat systematically of the disease, are not generally accessible.

These, in brief, are the reasons which have prompted me to undertake the preparation of this treatise. I thought that the

wants of medical science, here at least, demanded a history and comparison of the two chief forms of continued fever, as they are now ascertained to exist, fuller and more discriminating than had yet been written; and these wants I have endeavored to supply. My book aims at no other excellence, and no higher merit, than that of being a methodical and compendious summary of the actual state of our knowledge upon two most common and most important diseases. If it has reached this excellence, and if it possesses this merit, I am satisfied.

I have only to add in conclusion, that one of my leading purposes has been to bring out more clearly and strongly than has hitherto been done our means of diagnosis between the different species or forms of fever, and to ascertain and establish their nosological relations. It cannot be necessary to go into any formal vindication of the importance of this diagnosis. Setting it aside altogether, as a matter of science, it is the first essential condition of all sound practice. In the following history it will be noticed that I have spoken of no individual fever excepting the four which are more or less fully described; to wit, Typhoid Fever; Typhus Fever; Periodical Fever, in its three forms of Intermittent, Bilious Remittent, and Congestive; and Yellow Fever. The simple reason of this is, that I do not know anything of any other distinct fever amongst us. There may be such a disease as the Simple Fever of Fordyce, or the Ephemera of many writers. I know that adults, sometimes, in consequence of great or protracted fatigue, and that children still oftener, from inappreciable causes, are attacked with headache, loss of appetite, debility, and general febrile excitement, not referable to any local origin; which symptoms, after rest of from one to two or three days, either with or without medicine, usually subside, leaving the individual in good health. But whether this kind of disorder should be looked upon as a distinct established form of fever, seems to me, to say the least of it, very doubtful. As to an Inflammatory Fever distinct from Typhus or Typhoid Fever, I

can only say, with Nathan Smith, and Chomel, that I have no knowledge of any such disease.[1]

[1] Mr. James Moore, Surgeon, says: "Synocha, or pure inflammatory fever, is a disease so rare in this country, that many experienced practitioners have doubted its existence." The same writer says that Cullen acknowledged that he never saw the disease.

Dr. Thomas Bateman, a sensible and judicious writer, says: "With respect to *Synocha*, Dr. Cullen's distinguished successor, Dr. James Gregory, asserted that, during thirty years' practice, he had never seen a purely inflammatory fever unconnected with acute inflammation of some organ; and my own subsequent experience entirely coincides with that assertion. It cannot be doubted, as Dr. Gregory remarked, that the *causus*, or ardent fever of the ancients, was the endemial bilious remittent of hotter climates, and that no continued fever of this country assumes that character."—*A Succinct Account of the Contagious Fever, etc.*, p. 25.

I may add, further, that the affection described by most of our systematic writers under the name of *Infantile Remittent Fever*, seems to me to have no existence as a distinct disease. Gastro-intestinal irritation, bilious remittent fever, typhoid fever, and still other diseases are confounded under the foregoing term.

SEPTEMBER 1, 1842.

# CONTENTS.

## PART I.

### TYPHOID FEVER.

#### CHAPTER I.


| | PAGE |
|---|---|
| PRELIMINARY MATTERS | 49 |
| ART. I.—Introductory | 49 |
| ART. II.—Names of the Disease | 50 |
| ART. III.—History | 52 |
| ART. IV.—Methods of Description | 54 |


#### CHAPTER II.


| | |
|---|---|
| SYMPTOMS | 56 |
| ART. I.—Mode of Access | 56 |
| ART. II.—Febrile Symptoms | 58 |
| Sec. 1.—Chills. | 58 |
| Sec. 2.—Heat and State of Skin | 59 |
| Sec. 3.—Pulse | 61 |
| ART. III.—Thoracic Symptoms | 62 |
| Sec. 1.—Respiration | 62 |
| Sec. 2.—Cough | 63 |
| Sec. 3.—Physical Signs | 63 |
| ART. IV.—Cerebro-spinal, or Nervous Symptoms | 63 |
| Sec. 1.—Headache | 64 |
| Sec. 2.—Pains in the Back and Limbs | 64 |
| Sec. 3.—Mind | 65 |
| Sec. 4.—Physiognomy | 68 |
| Sec. 5.—Somnolence | 68 |
| Sec. 6.—Vigilance | 68 |
| Sec. 7.—Senses | 69 |
| Sec. 8.—Muscles | 69 |
| ART. V.—Digestive and Abdominal Symptoms | 72 |
| Sec. 1.—Tongue and Mouth | 72 |
| Sec. 2.—Appetite and Thirst | 73 |
| Sec. 3.—Nausea and Vomiting | 73 |
| Sec. 4.—State of Bowels | 74 |

PAGE

Sec. 5.—Abdominal Pains . . . . . 76
Sec. 6.—Tympanites . . . . . 77
ART. VI.—Miscellaneous Symptoms . . . . 78
Sec. 1.—Emaciation . . . . . 78
Sec. 2.—State of the Urine . . . . . 78
Sec. 3.—Epistaxis . . . . . 79
Sec. 4.—Cutaneous Eruptions . . . . . 79
Sec. 5.—Eschars . . . . . 82

## CHAPTER III.

ANATOMICAL LESIONS . . . . . 84
ART. I.—Lesions of the Circulatory Apparatus . . . 84
Sec. 1.—Heart and Aorta . . . . . 84
Sec. 2.—State of the Blood . . . . . 86
ART. II.—Lesions of the Respiratory Apparatus . . . 87
Sec. 1.—Lungs . . . . . 87
Sec. 2.—Bronchiæ, Epiglottis, &c. . . . . 88
ART. III.—Lesions of the Brain and its Membranes . . . 89
ART. IV.—Lesions of the Digestive and Abdominal Organs . 90
Sec. 1.—Pharynx and Œsophagus . . . . 90
Sec. 2.—Stomach . . . . . 91
Sec. 3.—Small Intestines . . . . . 92
Sec. 4.—Large Intestine . . . . . 100
Sec. 5.—Lymphatic Glands . . . . . 101
Sec. 6.—Spleen . . . . . 102
Sec. 7.—Liver . . . . . 103
Sec. 8.—Pancreas; Salivary Glands; Urinary Apparatus; and Sexual Organs . . . . . 103
ART. V.—General Remarks . . . . . 104

## CHAPTER IV.

CAUSES.
Sec. 1.—Locality . . . . . 107
Sec. 2.—Season . . . . . 118
Sec. 3.—Contagion . . . . . 120
Sec. 4.—Exemption from Second Attacks . . . 123
Sec. 5.—Epidemic Influences . . . . . 124
Sec. 6.—Age . . . . . 124
Sec. 7.—Sex . . . . . 126
Sec. 8.—Race . . . . . 126
Sec. 9.—Occupation . . . . . 127
Sec. 10.—Recency of Residence . . . . 127
Sec. 11.—Filth, Crowding, &c. . . . . 127
Sec. 12.—Exposure; Excesses, &c. . . . . 128

## CHAPTER V.

VARIETIES AND FORMS . . . . . 129

## CHAPTER VI.

PAGE

DURATION, MARCH, AND COMPLICATIONS

ART. I.—Duration . . . . . 134
ART. II.—March and Complications . . . . 135
ART. III.—Peritonitis . . . . . 136
ART. IV.—Relapses. . . . . 137
ART. V.—Sequelæ . . . . . 138

## CHAPTER VII.

MORTALITY AND PROGNOSIS . . . . . 139

## CHAPTER VIII.

DIAGNOSIS . . . . . 147

## CHAPTER IX.

THEORY . . . . . 159

## CHAPTER X.

TREATMENT . . . . . 167
ART. I.—Dr. Jackson's Method . . . . . 168
ART. II.—Dr. Nathan Smith's Method . . . . 171
ART. III.—Chomel's Method . . . . . 174
ART. IV.—Louis's Method . . . . . 179
ART. V.—Bouillaud's Method . . . . . 182
ART. VI.—De Larroque's Method . . . . . 183
ART. VII.—Miscellaneous . . . . . 184

## CHAPTER XI.

DEFINITION . . . . . 188

## CHAPTER XII.

BIBLIOGRAPHY . . . . . 190

# PART II.

## TYPHUS FEVER.

### CHAPTER I.

PAGE

PRELIMINARY MATTERS . . . . . 197
ART. I.—Introductory . . . . . 197
ART. II.—Names of the Disease . . . . . 199

### CHAPTER II.

SYMPTOMS . . . . . 200
ART. I.—Mode of Access . . . . . 200
ART. II.—Febrile Symptoms . . . . . 201
Sec. 1.—Chills . . . . . 201
Sec. 2.—Heat and State of Skin . . . . 202
Sec. 3.—Pulse . . . . . 203
ART. III.—Thoracic Symptoms . . . . . 204
ART. IV.—Cerebro-Spinal, or Nervous, Symptoms . . . 206
Sec. 1.—Headache, Pains in Back and Limbs . . . 206
Sec. 2.—Mind . . . . . 207
Sec. 3.—Physiognomy . . . . . 210
Sec. 4.—Senses . . . . . 212
Sec. 5.—Muscles . . . . . 212
ART. V.—Digestive and Abdominal Symptoms . . . 213
Sec. 1.—Tongue and Mouth . . . . . 213
Sec. 2.—Appetite . . . . . 214
Sec. 3.—Nausea and Vomiting . . . . 214
Sec. 4.—State of Bowels . . . . . 215
ART. VI.—Miscellaneous Symptoms . . . . 217
Sec. 1.—Emaciation . . . . . 217
Sec. 2.—State of the Urine . . . . . 217
Sec. 3.—Epistaxis . . . . . 218
Sec. 4.—Cutaneous Eruptions . . . . . 218
Sec. 5.—Eschars . . . . . 224
Sec. 6.—State of the Blood . . . . . 224

### CHAPTER III.

ANATOMICAL LESIONS . . . . . 226
ART. I.—Lesions of the Thoracic Organs . . . 227
Sec. 1.—Lungs . . . . . 227
Sec. 2.—Larynx and Pharynx . . . . . 228
Sec. 3.—Heart and Blood . . . . . 229
ART. II.—Lesions of the Brain . . . . . 230
ART. III.—Lesions of the Abdominal Organs . . . 232
Sec. 1.—Stomach . . . . . 232

PAGE
Sec. 2.—Intestines . . . . . 232
Sec. 3.—Miscellaneous . . . . . 236
Sec. 4.—General Remarks . . . . . 236

CHAPTER IV.

CAUSES . . . . . 238
Sec. 1.—Locality . . . . . 238
Sec. 2.—Season, Weather, &c. . . . . 241
Sec. 3.—Contagion . . . . . 243
Sec. 4.—Epidemic Influences . . . . . 248
Sec. 5.—Crowding; Filth; Famine, &c. . . . . 249
Sec. 6.—Age . . . . . 252
Sec. 7.—Sex . . . . . 253
Sec. 8.—Recency of Residence . . . . . 254

CHAPTER V.

VARIETIES AND FORMS . . . . . 255

CHAPTER VI.

DURATION AND MARCH . . . . . 258
Sec. 1.—Duration . . . . . 258
Sec. 2.—Crises . . . . . 259
Sec. 3.—Sequelæ . . . . . 262
Sec. 4.—Relapses . . . . . 263

CHAPTER VII.

MORTALITY AND PROGNOSIS . . . . . 264

CHAPTER VIII.

DIAGNOSIS . . . . . 272
Sec. 1.—Symptoms . . . . . 273
Sec. 2.—Lesions. . . . . 275
Sec. 3.—Causes . . . . . 276
Sec. 4.—Duration . . . . . 277
Sec. 5.—Effects of Remedies . . . . . 277
Sec. 6.—Historical . . . . . 278

CHAPTER IX.

THEORY . . . . . 322

## CHAPTER X.

PAGE
TREATMENT . . . . . 324
Sec. 1.—Bleeding . . . . . 324
Sec. 2.—Purgatives . . . . . 328
Sec. 3.—Affusions and Ablutions . . . . 328
Sec. 4.—Stimulants and Tonics . . . . 329
Sec. 5.—Miscellaneous . . . . . 331

## CHAPTER XI.

DEFINITION . . . . . 335

## CHAPTER XII.

BIBLIOGRAPHY . . . . . 337

---

# PART III.

## PERIODICAL FEVER.

## CHAPTER I.

PRELIMINARY MATTERS . . . . . 347
ART. I.—Introductory . . . . . 347
ART. II.—Names of the Disease . . . . . 349

## CHAPTER II.

SYMPTOMS . . . . . 350
ART. I.—Mode of Access . . . . . 350
ART. II.—Febrile Symptoms . . . . . 351
Sec. 1.—Chills . . . . . 351
Sec. 2.—Remissions or Type . . . . . 352
Sec. 3.—State of Surface . . . . . 355
Sec. 4.—Heart and Pulse . . . . . 357
ART. III.—Thoracic Symptoms . . . . . 357
ART. IV.—Cerebro-Spinal or Nervous Symptoms . . . 358
Sec. 1.—Headache; Pains in Back and Limbs . . 358
Sec. 2.—Mind . . . . . 358
Sec. 3.—Senses and Physiognomy . . . . 360
Sec. 4.—Muscular Strength . . . . . 360

PAGE

ART. V.—Digestive, and Abdominal Symptoms . . . . 361
Sec. 1.—Tongue and Mouth . . . . . 361
Sec. 2.—Appetite and Thirst . . . . . 362
Sec. 3.—Nausea and Vomiting . . . . 363
Sec. 4.—Epigastrium and Abdomen . . . . 363
Sec. 5.—Bowels . . . . . 364
Sec. 6.—Urine . . . . . 365

CHAPTER III.

ANATOMICAL LESIONS . . . . . 367
ART. I.—Lesions of the Thoracic Organs . . . . 367
Sec. 1.—Lungs. . . . . 367
Sec. 2.—Heart and Blood . . . . . 367
ART. II.—Lesions of the Cerebro-Spinal Apparatus . . 368
Sec. 1.—Brain and its Envelops . . . . 368
ART. III.—Lesions of the Abdominal Organs . . . 372
Sec. 1.—Liver . . . . . 372
Sec. 2.—Spleen . . . . . 377
Sec. 3.—Stomach . . . . . 378
Sec. 4.—Intestines . . . . . 380
ART. IV.—General Remarks . . . . . 383
Sec. 1.—Relation of Lesions to Symptoms . . . 383
Sec. 2.—Importance, Relative and Absolute . . . 384

CHAPTER IV.

CAUSES . . . . . 386
Sec. 1.—Locality . . . . . 386
Sec. 2.—Season; Temperature; Weather . . . 389
Sec. 3.—Age . . . . . 390
Sec. 4.—Sex . . . . . 391
Sec. 5.—Race . . . . . 391
Sec. 6.—Exposure; Excesses, &c. . . . . 392
Sec. 7.—Malaria . . . . . 393

CHAPTER V.

VARIETIES AND FORMS . . . . . 397
ART. I.—Bilious Remittent Form . . . . . 397
ART. II.—Congestive Fever . . . . . 398
Sec. 1.—Names . . . . . 398
Sec. 2.—Type, and Mode of Attack . . . . 399
Sec. 3.—Varieties; Comatose . . . . . 400
Sec. 4.—Delirious Variety . . . . . 401
Sec. 5.—Algid Variety . . . . . 402
Sec. 6.—Gastro-Enteric Variety . . . . 404
ART. III.—Intermittent Fever . . . . . 406

## CHAPTER VI.

PAGE

DURATION AND MARCH . . . . . 408
Sec. 1.—Duration . . . . . 408
Sec. 2.—March . . . . . 408
Sec. 3.—Critical Days . . . . . 411
Sec. 4.—Relapses . . . . . 411
Sec. 5.—Sequelæ . . . . . 411

## CHAPTER VII.

MORTALITY AND PROGNOSIS . . . . . 415

## CHAPTER VIII.

DIAGNOSIS . . . . . 422

## CHAPTER IX.

THEORY . . . . . 425

## CHAPTER X.

TREATMENT . . . . . 429
ART. I.—Bilious Remittent Fever . . . . . 429
Sec. 1.—Preliminary . . . . . 429
Sec. 2.—Bloodletting . . . . . 429
Sec. 3.—Purgatives . . . . . 431
Sec. 4.—Cinchona . . . . . 431
Sec. 5.—Diaphoretics, Refrigerants, &c. . . . . 433
ART. II.—Congestive Fever . . . . . 433
ART. III.—Intermittent Fever . . . . . 439

## CHAPTER XI.

DEFINITION . . . . . 444

## CHAPTER XII.

BIBLIOGRAPHY . . . . . 446

# PART IV.

## YELLOW FEVER.

### CHAPTER I.

PAGE
NAMES OF THE DISEASE . . . . . 457

### CHAPTER II.

SYMPTOMS . . . . . 458
ART. I.—Mode and Period of Access . . . . 458
ART. II.—Febrile Symptoms . . . . . 460
Sec. 1.—Chills . . . . . 460
Sec. 2.—State of Surface: Sweats . . . . 460
Sec. 3.—Pulse . . . . . 461
ART. III.—Digestive and Abdominal Symptoms . . . 464
Sec. 1.—Tongue and Mouth . . . . . 464
Sec. 2.—Appetite and Thirst . . . . . 464
Sec. 3.—Nausea and Vomiting . . . . . 466
Sec. 4.—Bowels; Abdomen; Epigastrium . . . 467
Sec. 5.—Urine . . . . . 468
ART. IV.—Cerebro-Spinal, or Nervous Symptoms . . . 469
Sec. 1.—Headache and other Local Pains . . . 469
Sec. 2.—State of Mind . . . . . 470
Sec. 3.—Physiognomy . . . . . 471
Sec. 4.—Strength; Muscles; Senses . . . . 473
ART. V.—Miscellaneous Symptoms . . . . . 474
Sec. 1.—Color of Skin . . . . . 474
Sec. 2.—Hemorrhages . . . . . 475
Sec. 3.—Chest . . . . . 476

### CHAPTER III.

ANATOMICAL LESIONS . . . . . 477
ART. I.—Lesions of Lungs, Heart, and Blood . . . 477
Sec. 1.—Lungs . . . . . 477
Sec. 2.—Heart . . . . . 478
Sec. 3.—Blood . . . . . 479
ART. II.—Lesions of the Cerebro-Spinal Apparatus . . 480
ART. III.—Lesions of the Abdominal Organs . . . 480
Sec. 1.—Stomach . . . . . 480
Sec. 2.—Intestines . . . . . 483
Sec. 3.—Liver . . . . . 484
Sec. 4.—Gall-Bladder and its Contents . . . 489
Sec. 5.—Spleen; Mesenteric Glands; Urinary Organs . 491

PAGE

Art. IV.—Miscellaneous Lesions . . . . . 491
Art. V.—General Remarks . . . . . 491
Sec. 1.—Relation between Symptoms and Lesions . . 491
Sec. 2.—Causes of Death . . . . . 494

CHAPTER IV.

Causes . . . . . 495
Sec. 1.—Locality . . . . . 495
Sec. 2.—Season . . . . . 499
Sec. 3.—Temperature and Weather . . . . 500
Sec. 4.—Age . . . . . 502
Sec. 5.—Sex . . . . . 502
Sec. 6.—Race . . . . . 504
Sec. 7.—Constitution . . . . . 505
Sec. 8.—Occupation . . . . . 506
Sec. 9.—Acclimation . . . . . 506
Sec. 10.—Exemption from Subsequent Attacks . . 508
Sec. 11.—Epidemic Influences . . . . . 510
Sec. 12.—Sporadic . . . . . 511
Sec. 13.—Marsh Miasmata . . . . . 512
Sec. 14.—Decaying Animal and Vegetable Matter . . 513
Sec. 15.—Contagion . . . . . 515
Sec. 16.—Exposure; Fatigue; Excesses, &c. . . . 524
Sec. 17.—Essential Poison . . . . . 526

CHAPTER V.

Varieties and Forms . . . . . 528
Sec. 1.—Season and Locality . . . . . 528
Sec. 2.—Forms, or Grades . . . . . 529

CHAPTER VI.

March and Duration . . . . . 533
Sec. 1.—March, or Type . . . . . 533
Sec. 2.—Stages . . . . . 536
Sec. 3.—Duration . . . . . 538
Sec. 4.—Convalescence . . . . . 538
Sec. 5.—Relapses . . . . . 540
Sec. 6.—Sequelæ . . . . . 540
Sec. 7.—Period of Incubation . . . . . 540

CHAPTER VII.

Mortality and Prognosis . . . . . 541

## CHAPTER VIII.

PAGE
DIAGNOSIS . . . . . 547

## CHAPTER IX.

THEORY . . . . . 550

## CHAPTER X.

TREATMENT . . . . . 552
Sec. 1.—Preliminary . . . . . 552
Sec. 2.—Mercurials . . . . . 553
Sec. 3.—Antiphlogistic Method . . . . 555
Sec. 4.—Cinchona; Tonics and Stimulants . . . 558
Sec. 5.—Purgatives . . . . . 558
Sec. 6.—Spanish Method . . . . . 558
Sec. 7.—Mobile Method . . . . . 559
Sec. 8.—Prophylactics . . . . . 560
Sec. 9.—Conclusion . . . . . 561

## CHAPTER XI.

DEFINITION . . . . . 563

## CHAPTER XII.

BIBLIOGRAPHY . . . . . 565

# PART FIRST.

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THE

## HISTORY, DIAGNOSIS, AND TREATMENT

OF

# TYPHOID FEVER.

A

# TREATISE ON FEVERS.

## PART I.

## TYPHOID FEVER.

### CHAPTER I.

#### PRELIMINARY MATTERS.

#### ARTICLE I.

##### INTRODUCTORY.

In writing a history of the fevers of the United States, I begin with that of Typhoid Fever, for three reasons.

In the first place, my own knowledge of the disease, derived from personal observation, is much more extensive than of the other forms of fever. My attention was early and strongly called to its investigation by the remarkable work of Louis upon the same disease, as it shows itself in Paris. Many years of my professional life have been passed in the midst of a population especially exposed to some of its predisposing causes, and amongst whom it has very constantly, and at times very extensively, prevailed; so that a personal acquaintance with this fever, of twenty years' continuance, has given me sufficient opportunity to become somewhat familiar with its character; more so, at any rate, than with the remaining diseases, which I propose to describe.

In the second place, there is good reason to think that typhoid fever is more generally and extensively prevalent, in various parts of the world, than the other distinct forms of essential or idiopathic fever. This is a point which requires further and

more accurate observation for its settlement; but it is pretty certainly true of the temperate latitudes of Europe and America. The actual extent of its prevalence will be more fully spoken of hereafter.

In the third place, typhoid fever has been more minutely, more accurately, more thoroughly studied, than any other distinct form of essential or idiopathic fever. Although a complex, and in many respects an obscure disease, its diagnosis is, in most cases, easily and positively made out. Its natural history has been very fully investigated, and the results of this investigation faithfully recorded and summed up. Its symptoms, its lesions, its causes, so far as these latter are appreciable, have been very exactly ascertained and settled; and they have been very patiently compared with the symptoms, the lesions, and the causes of other diseases. This more complete knowledge of the disease renders it a very convenient starting-point, and an exceedingly valuable standard of comparison, in our subsequent study of other forms of fever, more or less related to this, but whose history and character have not been so definitively and precisely established. These, very briefly, are the simple and obvious considerations which induce me to commence this history with a description of typhoid fever.

## ARTICLE II.

### NAMES OF THE DISEASE.

I have adopted the term *typhoid fever* as the name of this disease, simply because it is not particularly objectionable, and because it seems to be coming into general use. It is that which is most commonly given to the disease by the French, although many of their writers have coined other, and as they think, more appropriate appellations. Petit and Serres described it, in 1813, under the name of *entero-mesenteric fever*. This term, as has been observed by Andral, has the advantage of marking the peculiar lesion of the disease, while it is free from the objection of prejudging, by any implication, its nature or character. Bretonneau calls it a *dothinenterite*, from the pustular inflammation of the intestine. Cruveilhier and others have applied to it the name of *follicular enteritis*. Bouillaud has called it *typhoid-*

*entero-mesenteritis*. By the Germans it is commonly called *abdominal typhus*. By some German writers it is called *nervous fever*, or *gastric nervous fever;* by some it is called *intestinal ulcerating typhus*, or *typhous suppuration of the intestines;* by others, *typhus gangliaris*, and so on.[1] In New England, it has generally been known under the name of *typhus*, or *typhous fever;* and by many practitioners it still continues to be so designated. Since, however, it has been ascertained that the disease differs, in many important respects, from the *typhus* of British writers, it has become manifestly necessary to apply to it some other appellation; and, in conformity to the example of Louis, Gerhard, Jackson, and others, I have chosen that of *typhoid fever*.

It may be well to say a word here in regard to the identity of the continued fever of New England with the typhoid fever of the French pathologists. This identity is very clearly and positively settled. No one familiar with the disease, as it shows itself in Paris, and as it is described by Louis, Chomel, and Andral, and who reads Nathan Smith's description of the *typhous fever* of New England, can doubt for a moment, so far as the symptomatology is concerned, that such is the case. The identity of the pathological lesions in the fever of the two countries has been more recently established. Dr. E. Hale, Jr., of Boston, published in the *Medical Magazine* for December, 1833, an account of three dissections of persons, considered by him to have died with this disease. If the diagnosis in these cases could be looked upon as certain and positive, they would constitute, so far as I know, the first published examples of the intestinal lesion of the disease, as it occurs in New England. The diagnosis, however, in all the instances, must be regarded as somewhat doubtful, and the alteration of the intestinal follicles does not seem to have been very clearly or strongly marked. The first authentic and unequivocal cases on record, that I have been able to find, are two, which were published by Dr. Gerhard, in the *American Journal of Medical Sciences* for February, 1835. In the *Medical Magazine* for June, 1835, I gave a short account of the entero-mesenteric alterations in five cases of unequivocal typhoid fever, which alterations corresponded ex-

[1] Edin. Med. and Surg. Journ., vol. xlviii. p. 145.

actly to those described by Louis. I have upon my note-book the anatomical history of two similar cases, which occurred during the months of January and February, 1833, but which were never published. Dr. James Jackson, Jr., then a medical student, observed the intestinal lesion in a clear case of the disease as early as October, 1830, although the account of the observation was not made public till 1835.[1] Dr. Jackson, Jr., after having studied typhoid fever in Paris, aided and guided by the personal instructions of Louis, again saw the disease in Boston; and in two cases, one of which occurred in 1833, and the other in 1834, he found the characteristic lesion of the intestinal follicles and mesenteric glands. An account of these observations was published in 1835. Dr. Jackson, Sen., in his Report on Typhoid Fever, communicated to the Massachusetts Medical Society in June, 1838, says, that the alteration of Peyer's glands had been noticed at the Massachusetts General Hospital, previous to 1833, in cases which were carefully examined. Since the period above referred to, more extensive and accurate observations by Dr. J. Jackson, Dr. Hale, Dr. Bigelow, Dr. Bowditch, Dr. J. B. S. Jackson, Dr. Shattuck, Jr., Dr. Holmes, and others of Boston; and by Dr. Gerhard and Dr. Stewardson of Philadelphia, Dr. Swett of New York, and others, have uniformly sustained the correctness of these early conclusions, and demonstrated the entire identity of the typhoid fever of Paris and of the United States.

## ARTICLE III.

### HISTORY.

By the history of typhoid fever, here, I mean what may be called its literary history—an account of the successive investigations which have led to our actual knowledge of the disease. In order to render this at all full and complete, it would be necessary to go into the history of the entire subject of continued fever, a subject more extensive and more complicated perhaps than any other in the domain of medical science. Neither the design nor the character of my book renders it necessary that I should do this; I shall content myself with touching simply a few of the more salient points of this history.

[1] Memoir of James Jackson, Jr., p. 222, *et seq.*

The character of typhoid fever—its symptoms, its lesions, its causes, and so on—was first fully and carefully studied by the physicians of the continent of Europe. The first description of its pathological lesions, at all complete and satisfactory, was contained in the work of Prost, published in 1804. Some years subsequent to this, Broussais succeeded in establishing his brilliant and powerful but transitory dynasty, and under its tyrannous domination, the study of continued fever, on the continent, was cramped and misdirected, instead of being properly guided, favored, and advanced. Everything gave way to the bold effrontery of the dogma, that all fevers are dependent upon local inflammations. In looking back now upon the career and achievements of Broussais, it is astonishing to see with what meek alacrity our science put on and wore the yoke which he fitted to her neck. The exclusive and hypothetical views of Broussais were controverted ably, and at length successfully by Andral, Chomel, and other pathologists; but it is to the great work of Louis that we are indebted for the first complete and comprehensive description of typhoid fever—a description so complete, and so comprehensive, that the labors of subsequent observers have hardly added to its materials, or modified its proportions to any appreciable extent. Amongst other continental observers who studied particularly the intestinal lesions of the disease, were Rœderer and Wagler, Petit and Serres, and Bretonneau. The original researches of Louis and Chomel were confined to the disease as it shows itself in the adult; within the last few years the typhoid fever of children has been carefully studied, especially by Barthez and Rilliet, and by Taupin. Dr. Richard Bright has given, amongst his very splendid pathological illustrations, some excellent specimens of the intestinal ulcerations of this disease. The important and valuable papers of Dr. Jenner, of London, have already been referred to. The most important publications upon the subject made in this country are those of Nathan Smith, Dr. James Jackson, and Dr. E. Hale, of Boston, and Dr. W. W. Gerhard, of Philadelphia.

## ARTICLE IV.

### METHODS OF DESCRIPTION.

There are two methods, either of which may be adopted, in the description of a disease. One of these, and that which, with a few exceptions, has been in universal use from the time of Hippocrates to the era of Louis, consists in a general enumeration of the more striking and obvious phenomena of the disease, in their various combinations and progress, constituting a kind of portrait, or picture. The other, which has been followed by many writers within the last fifteen years, especially amongst the French, consists, not merely in this general enumeration of the phenomena, their combinations and progress, but in a thorough and careful analysis of these phenomena; in a special and particular study of each individual element, which goes to make up the disease; and in a strict estimate of the relative value and importance of each and all of these several elements. This analytical process, this "searching operation," is applied in study, as well as in description, not only to the symptoms of a disease, but, to a considerable extent, also, to its pathology, etiology, and therapeutics. Amongst the best examples of the first method,—the physiognomical portraiture of disease,—may be mentioned Sydenham's description of measles and St. Vitus's dance, and Dr. Ware's description of delirium tremens. The first and one of the most perfect examples of the latter is to be found in Louis's Researches upon Phthisis, published in 1825.

Each of these methods has its advantages and its disadvantages, its excellences and its defects. By the first, a more complete and integral picture of the disease is presented at once, to the mind, than can be done by the second. We are enabled to see, at a single glance, the form, the outlines, the features, the physiognomy of the disease. But in many very important particulars, this method is inferior to the second. It is merely a picture of disease; like all other pictures, more or less like the original, strongly or feebly colored, according to the peculiar taste or ability of the individual artist. It is necessarily wanting in the scientific accuracy of which the second is susceptible. It is less complete, less perfect. The disadvantages of the latter consist in the absence of that wholeness and unity of impression,

which are made by the former. The mind, in order to get at the integral and entire picture, must arrange and combine the scattered materials, which it has studied separately. As one of the leading purposes of the present work is to point out, as far as our actual knowledge will enable us to do so, the characteristic features of each of the four great forms of idiopathic fever; to establish, as far as possible, a clear and positive diagnosis; to ascertain the resemblances and the differences between them; I shall rely almost exclusively upon the last-mentioned method, as the only one capable of leading to these results.

# CHAPTER II.

## SYMPTOMS.

### ARTICLE I.

#### MODE OF ACCESS.

THERE is a good deal of difference, in different cases of typhoid fever, so far as the suddenness or violence of the seizure is concerned. There is no other acute disease, perhaps, in which the attack is more frequently slow and gradual than in this. In many cases, it is quite impossible for the patient to fix with any accuracy upon the day when his fever commenced. Neither, in many of these same cases, is he able to tell *in what* his sickness consisted. He can only say that, for several days, he has not enjoyed his accustomed degree of health. He may have merely felt a sensation of mental and bodily languor, an indisposition, or an inability to accomplish his usual labor, either of mind or body. He may have had slight and dull pain in the head, or in the back and limbs, with a general feeling of soreness or of fatigue. At the same time he may have experienced some sensations of chilliness, alternating with heat. There may have been, also, diminution or loss of appetite, and moderate thirst, with a dry or clammy state of the mouth. The expression of the countenance sometimes becomes listless and dull, the eye loses its animation, and the mind is either indifferent or apprehensive. There may have been moderate diarrhœa, with some pains in the abdomen. This obscure and indefinite condition of ill health may continue for more than a week, occasionally for two or three weeks even, with but slight changes from day to day. Oftentimes there is a slow but steady increase in the severity of these morbid sensations, with a like gradual but regular appearance of other and more characteristic symptoms of the disease—these latter coming out, day by day, one after another, a complete and suc-

cessive development of the peculiar and strongly marked phenomena of the disease. In other cases, after an indefinite continuance of this obscure precursory period, there is a sudden supervention of the more violent symptoms. Nathan Smith says: "The disease attacks in such a gradual manner, that we hardly know on what day to fix its commencement."[1] Dr. James Jackson says: "There is more difficulty, perhaps, in ascertaining the commencement in cases of typhoid fever, than in many other acute diseases."[2]

In a certain proportion of cases, however, precisely how large, I am not able to say, the access of the fever is more violent, and its period much more distinctly marked. Chomel, indeed, says, that most frequently the invasion is sudden, coming on in the midst of perfect health, unexpectedly, and not preceded by any precursory symptoms. Of one hundred and twelve cases, in which this point was exactly observed, the access was sudden in seventy-three; in the others, there were obscure premonitory symptoms.[3] Forget thinks the gradual access of the disease is more common than is indicated by these statistics, and this opinion agrees with my own observation. I am sure that, in a large proportion of cases, in private practice, the disease is slow and gradual in its approaches. It will be at once seen that this question can be more readily settled in private than in hospital practice. The mode of attack, in these cases, is various; most frequently, perhaps, by a chill, accompanied by debility and headache, and followed by heat and thirst. In other cases, the mode of attack is different. During a grave epidemic of typhoid fever, which prevailed in the city of Lowell, in the winter of 1834–5, I saw two cases, in which the first feelings of ill health, experienced by the patients, so far as could be ascertained from them, consisted of severe, griping pains in the bowels, accompanied with tenderness on pressure. In these cases, diarrhœa was an early and prominent symptom. In another, and that a fatal case, the patient had been at her usual work during the day, and on getting into bed at night felt *lame*, this being the first feeling of sickness of which she was conscious. The mode of attack was ascertained in seventeen fatal cases by Dr. Jenner. "In

[1] A Practical Essay on Typhus Fever. By Nathan Smith, M. D.
[2] Report on the Typhoid Fever. By James Jackson, M. D.
[3] Leçons de Clinique Médicale, Chomel, p. 4.

so till the twenty-third day, the patient dying on the twenty-fifth. In another, admitted on the fifth day, there was a circumscribed flush on the cheeks, on the seventh day, which continued with little change till the fifteenth day, the patient dying on the seventeenth day.

"This flush when conjoined, as it sometimes was, with extreme emaciation, sunken eyes, large pupils, quick breathing, sharp and somewhat anxious manner, forcibly recalled to the mind cases, not of typhus fever, but of phthisis."[1] In the latter stage of grave and fatal cases, the intensity of the morbid heat frequently diminishes; and in mild cases, it is not often very high, even in their early periods.

This morbid heat, as one of the elements of the exacerbations, or fever fits, is subject to certain variations in the course of each day. In grave cases, these are of very constant daily occurrence. Sometimes they are irregular in their appearance, coming on at different and uncertain times of the day, although more commonly there are two each day. In the early period of the disease, the most strongly marked exacerbation is usually in the afternoon. During these fever fits, there is increased redness of the cheeks, acceleration of the pulse, and a general aggravation of the severity of all the uncomfortable and painful sensations. Dr. Jackson remarks, that these exacerbations are much more common in some years than in others.[2]

The state of the skin, in regard to dryness and moisture, is quite different in different patients. In a small proportion of severe cases, the skin is almost constantly dry, during the whole course of the fever. In others, there is more or less moisture. Sometimes the sweats are limited to a short period following the evening exacerbation, or they break out in the night, during sleep. Not unfrequently they are profuse, sometimes confined to certain portions of the body, at others extending over the whole surface. Chomel says that they often exhibit a strong acid odor. Louis observes, that the sweats are in no degree proportionate to the morbid heat, and that not unfrequently they are prolonged during convalescence, preventing the re-establishment of the strength, and resisting the influence of aromatics and bitters. Nathan Smith speaks of "what has been called the *washer-*

[1] Jenner, &c. p. 20.
[2] Report, &c. p. 185.

*woman's sweat*, which is extremely profuse over the whole surface of the body and extremities; standing in large drops on the face, and giving to the cuticle, on the palms of the hands and soles of the feet, a corrugated appearance and a light color, as if it had been long macerated in water. In such cases, the perspiration is warm, till a short time before the patient expires." He never saw an instance of recovery after this kind of sweating.

Dr. Smith says, also: "There is a remarkable odor arising from a person affected by this disease, so peculiar that I feel assured that upon entering a room, blindfolded, where a person had been confined for some length of time, I should be able to distinguish it from all other febrile affections." My own experience, in this matter, coincides with that of Dr. Smith. This odor, which is not pungent and ammoniacal, like that which is said to arise from the bodies of patients with the grave forms of the British typhus, but of a semi-cadaverous and musty character, I have frequently noticed, especially during the late stages of severe and fatal cases.

After recovery, when the case has been one of considerable severity, the cuticle often peels off, in large flakes, from the palms of the hands and the soles of the feet; the hair, also, frequently falls off from the head, and is succeeded by a new growth.[1]

Sec. III.—*Pulse.* The circulation is nearly always accelerated; and, in many cases, otherwise modified. The frequency of the pulse, during the whole course of the disease, may be said to range between 70 and 140 in the minute. As a general rule, the frequency of the pulse is in proportion to the severity and danger of the disease. The pulse is considerably more frequent in female, than in male patients. Dr. Jackson's Report contains some interesting results in regard to this subject. He found, that in the cases which terminated favorably, the average, least frequent pulse was 74.16, and the average, most frequent pulse, 102.68; while in the cases which terminated fatally, the average, least frequent pulse was 91.88, and the average, most frequent pulse was 129.29. Amongst the fatal cases, in the males, the average, least frequent pulse was 85.50, the average, most frequent pulse, 124.29; while amongst the fatal cases, in the females, the

[1] Nathan Smith. On Typhous Fever.

average, least frequent pulse was 106.64, and the average, most frequent pulse, 138.58. With the establishment of convalescence, the pulse, generally, though not always, approaches its healthy standard of frequency.

The other variations in the character of the pulse are not susceptible of such definite statement, as those of its frequency, but they are still, in many cases, very obvious. Sometimes, especially in mild cases, where the circulation is only moderately accelerated, the pulse preserves its natural softness and volume. This is never the case where it is very frequent. The pulse is then sometimes sharp and jerky, generally small, and pretty easily compressed, and not unfrequently, undulating, or *bis-feriens*.

Distinct intermissions and irregularity of the pulse are not very common, although they occur in a moderate proportion of very grave and fatal cases. Louis thinks that this modification of the pulse is generally connected with a secondary affection of the heart.

## ARTICLE III.

### THORACIC SYMPTOMS.

SEC. I.—*Respiration.* Modifications in the character of the respiration are not often mentioned amongst the phenomena of typhoid fever; but they are of pretty frequent occurrence, and some of them are deserving of particular notice. The most common alteration of the breathing consists simply in the usual acceleration, which accompanies febrile excitement. Under certain circumstances, however, there is a more marked and peculiar change in the character of the breathing. In high grades of the disease, and particularly in its later stages, accompanied invariably or nearly so by delirium or stupor, the respiration becomes irregular, noisy, and hissing. Nathan Smith speaks particularly of this peculiarity of the breathing. He says: "After the patient has been some time sick, if the disease proves severe, there is a peculiar whistling sound produced when he breathes through the nose; and when asleep, or lying in a state of coma, the mouth is generally kept open, and the breathing has somewhat of a stertorous sound." I do not think that this irregular, noisy, sibilant respiration depends, in any degree, upon disease

of the lungs. It is manifestly connected with and dependent upon a morbid condition of the brain.

Positive dyspnœa is not very common. It occurs where there is extensive secondary disease of the lungs, and sometimes it is occasioned by excessive tympanitic distension of the abdominal parietes.

SEC. II.—*Cough.* Typhoid fever, in a large majority of cases, is attended by cough. This is generally slight, and hardly attracts the attention of the physician or the patient. According to Louis, it most commonly commences between the fifth and the fifteenth day of the disease. The sputa are usually small in quantity, sometimes tenacious and colorless, sometimes bloody, simply from an admixture with blood from the nares, and sometimes rusty from a complication of pneumonitis.

SEC. III.—*Physical Signs.* The most constant and characteristic of the physical signs, connected with the thoracic organs, consists in a dry, sonorous, or sibilant rhonchus. This, in many cases, is very loud, and heard universally over the chest; its extent and severity altogether disproportionate to the dyspnœa. Louis was the first, I think, who noticed, particularly, this sign in typhoid fever. It appears early in the disease. Late in the fever, especially near the close of cases about to terminate fatally, there is often a circumscribed crepitous rhonchus, with other physical signs of local, secondary pneumonitis. Occasionally, instead of the dry, sonorous or sibilant, there is a humid or mucous rhonchus. In many of the grave and fatal cases, there is some dulness on percussion over the most dependent portion of the chest.

## ARTICLE IV.

### CEREBRO-SPINAL, OR NERVOUS SYMPTOMS.

Having completed the detail of symptoms, to which the term *febrile* is more particularly applied, and which, with certain modifications and peculiarities, are common to all essential fevers, to all acute inflammatory diseases of considerable extent or severity, and to very many chronic organic alterations, I now proceed to

the description of another very extensive group of phenomena, consisting in disturbances of the functions of the nervous apparatus. These disturbances occupy a very important place in the natural history of typhoid fever, and serve, to a very considerable degree, to distinguish it from nearly all other forms of disease.

SEC. I.—*Headache.* Pain in the head is amongst the most constant symptoms of the disease. It is, indeed, very rarely absent. Louis says, that of eighty-seven cases, in which the patients recovered, there was headache in all but three. It is as common an accompaniment of mild as it is of severe cases.

This pain is amongst the earliest symptoms. In many cases, it is the first thing which arrests the attention of the patient, and marks the formal access of the fever. Chomel says, that this occurs most frequently on rising in the morning. Sometimes it comes on after the third or fourth day. Its duration is various; but, very generally, after a longer or shorter period, it gradually diminishes in severity and finally disappears. In severe cases which recovered, Louis found its most common duration to be from eight to ten days.

The character and degree of this pain are various. Most frequently, it is dull, heavy, or throbbing, not occupying very much the attention of the patient. In a few cases, it is intense and acute, occasioning great distress. It is generally continuous, although its severity may be increased during the febrile exacerbations. It is less severe in mild, than in grave cases. Now and then, it is the most prominent and importunate symptom during the whole course of the disease. It occupies, most frequently, perhaps, the forehead and temples, but it often extends over the whole head. It is not unfrequently accompanied with some soreness and stiffness of the eyeballs, felt on pressure and on motion.

This symptom is generally present in children. Taupin says that the pain is almost always confined to the frontal region. It is heavy, and not very acute.

SEC. II.—*Pains in the back and limbs.* In many cases, the headache is attended with pains in the back and limbs. These pains, I think, are more constant and distressing in the legs than

in the arms. They go off with the headache, and frequently, indeed, before the disappearance of the latter.

Sec. III.—*State of the Mind.* I have already remarked, in speaking of the mode of access of typhoid fever, that one of the earliest and most constant phenomena consists in mental languor or inability. The patient is sometimes impatient and irritable, but more frequently listless and indifferent, or perhaps timid, and apprehensive of the danger of the approaching disease. He finds it difficult to fix his attention, or to pursue his accustomed train of thought. He is forgetful, and does not measure the lapse of time with his usual readiness and accuracy. This condition of the mind, in cases of moderate severity, may continue through the entire course of the fever, up to the period of convalescence. In graver and fatal cases, it is generally lost either in delirium or stupor.

Delirium is a common symptom of typhoid fever. Its frequency and degree are in pretty direct proportion to the severity and danger of the disease. Of forty-six fatal cases, cited by Louis, there was delirium in thirty-eight. In two of these, the delirium was of short duration; and in two others, it was present only during the last two or three days of life. But it should also be remarked, that seven of these cases were fatal from perforation of the intestine; and that this accident most frequently occurs in cases of moderate severity. I have seen the disease, in its worst form, terminating fatally in the course of the second week, without any delirium, but this is certainly not a common occurrence. Of Louis's fifty-six grave cases, terminating favorably, thirty-nine were marked by delirium; while of thirty-one mild cases, there was delirium in only three; and even in these few, it was mild in its character and of short duration.

In a small number of cases, this symptom is present at the commencement, or very early in the disease. Generally, however, it comes on in the course of the first or second week of the fever. As a general rule, it appears early in proportion to the gravity and to the rapid progress of the disease. Its march and duration are various. In fatal cases, it rarely disappears, after its occurrence, till it is lost either in coma or death. In grave cases, which recover, it goes off with the approach or commencement of convalescence, its subsidence or diminution constituting

one of the earliest and surest signs of this desirable event. In many cases, especially of a mild or moderate character, and for the first few days after its appearance, even in severe cases, it is present only during the night, or in the febrile paroxysm, or, perhaps, for a transient period immediately after waking. Under such circumstances, the patient can be called back from his incoherent wanderings, and, by exciting and holding the attention, his mind kept steady and clear. As soon, however, as this external excitement is withdrawn, the mind at once lapses into its disturbed and irregular action.

The delirium is generally of the kind to which the terms *low* and *muttering* have been applied. In many cases, however, and especially in such as are rapid in their march, and of great severity, the delirium is attended with wild and violent agitation. Sometimes, the patient is in constant and restless motion in his bed, picking at his bedclothes, or pulling them about, and frequently drawing them tightly over his head. Sometimes, he rises suddenly from his bed, when, if not restrained, he will sit upon its side, or wander, aimless and incoherent, for a few moments, about the room. In these cases, the agitation is so violent, that it requires the constant presence of attendants, and occasionally no slight degree of force, to keep the patient in his bed. This violent delirium is often attended, also, with cries and screams, particularly during the night. Of Dr. Jenner's twenty-three fatal cases, "there was no delirium in three, but in one of the three there was considerable mental confusion. Delirium was present in twenty cases; in ten of the twenty, it began severally on the third, sixth, sixth, tenth, fourteenth, fifteenth, twenty-third, twenty-sixth, twenty-eighth, and twenty-ninth days; seven were delirious, when first seen, between the thirteenth and twenty-first days inclusive; in the remaining three of the twenty cases, it was uncertain at what date of the disease the delirium set in. The delirium continued till death in nine cases; in eight of these, the fatal termination occurred on the twelfth, seventeenth, seventeenth, twenty-first, twenty-fifth, twenty-seventh, thirtieth, and thirtieth day of the disease; in one of the nine, the duration of the disease at the time of the patient's death was unknown. In one case, which proved fatal on the twenty-third day, there was no delirium after the twenty-first day, from which time till her death the patient lay in a state of profound stupor. The delirium

usually first showed itself at night, the patients sleeping during part of the day. It varied much in amount, sometimes being so violent that the patients left their beds, and even ran screaming through the wards; at others, showing itself by slight delusions, only discovered to exist by accident, or again by almost constant chattering. Ten of eighteen patients, i. e. more than one half, or in the proportion of 55.5 per cent. of those who were delirious after they entered the hospital, and of whom notes on the point were made, left their beds to wander about the ward."[1]

Distinctly monomaniacal delirium is very rare, although it is seen occasionally, after the active period of the disease has gone by. Louis alludes to some cases, where, in the midst of the most dangerous symptoms, the patients declared, that they were very well. He says, that he has never known a patient, under such circumstances, to recover. The restoration of the healthy action of the mind, on recovery, is more or less gradual, but nearly always complete. Nathan Smith says, that in some instances it appeared to him that the moral principle was affected after recovery. He speaks particularly of a young man, who, after recovery from a grave form of the disease, had a strong propensity to steal. After repeated thefts, some of them from a young man to whom he was under great obligations, and who had nursed him during his sickness, he was detected and punished. His character before his illness had been good. Dr. Smith says, also, that, after recovery, the whole time that has elapsed, and all the events that have taken place during the fever, are entirely blotted out from the memory, and are never after recovered. This may be true to a certain extent, but not without many exceptions and qualifications. Louis says, in his second edition, that, since the publication of his *Researches*, he has seen three hundred cases of typhoid fever, and that in only one was there any morbid condition of the mind remaining after the establishment of convalescence. Dr. Jenner says: "A remarkable fatuity remains, in some cases, long after recovery; and, in the majority of cases, I think there is some diminution of intellectual power for some little while after convalescence is established. I have seen many cases in which a childishness of mind remained for more than a month after, in other respects, restoration to health." According to

[1] Jenner, &c., p. 22.

Rilliet, delirium rarely shows itself in children before the fifteenth day of the disease.

SEC. IV.—*Physiognomy.* The expression of the countenance is strongly marked and peculiar. Very generally, even in cases of moderate severity, it is dull, listless, and vacant. The eye is heavy and languid. The indifference, sluggishness, and apathy of the mind are strongly painted on the face. If there is much suffering, either from pain, or, as more commonly happens, from the indefinite and indescribable restlessness of fever, the usual heavy and stupid expression of the countenance is mixed with or supplanted by one of sadness, anxiety, and distress. In many very mild cases, there can hardly be said to be any other change in the look, than a notable diminution of its animation and quickness.

SEC. V.—*Somnolence.* In most cases, preceding the delirium, and often alternating with it after its appearance, there is more or less drowsiness or stupor. This symptom makes its appearance early in proportion to the intensity and to the rapid march of the disease. Louis found it present in nine-tenths of his fatal cases. When the fever was of a mild character, he noticed it in a little more than half the cases, and in these, it was later in its access, slight in degree, and brief in its continuance. In fatal cases, it generally persists and increases, after its first appearance, unless when interrupted by violent delirium, until it ends in complete coma, or is lost in death. Where the fever terminates favorably, it gradually subsides, and, like the delirium, finally disappears with convalescence.

Dr. Jackson found that, in the Massachusetts General Hospital, it occurred in 1 case in 3.81, amongst those which terminated fatally, and in one case in 7.25, only, amongst those which terminated favorably.

SEC. VI.—*Vigilance.* There is an opposite condition, that of prolonged and obstinate watchfulness, which is common in typhoid fever. This distressing symptom, interrupted perhaps occasionally by a transient, disturbed, and unrefreshing slumber, is more common in the early than in the late periods of the disease, and

is much more frequently present in grave than in mild cases. It is often associated with restlessness or delirium.

Sec. VII.—*State of the Senses.* Amongst the alterations in the functions of the senses, the most common are *dizziness, ringing in the ears*, and *dulness of hearing.* The first of these is often felt amongst the precursory symptoms, before the patient has taken to his bed, and it occurs subsequently, especially on his attempting to assume an upright position. Ringing or buzzing sounds in the ears are present, mostly in the early or middle period of the disease, in a majority of severe cases. In mild cases, they also occur, but less frequently. Dulness of hearing was noticed by Louis in two-thirds of his fatal cases, and in thirty-three of forty-five grave cases, terminating in recovery. It is somewhat less common where the fever is moderate. It appears earlier than the *tinnitus aurium*, and is not unfrequently followed by this latter sensation. Nathan Smith says, in his description of the disease: "The hearing is often impaired, almost from the commencement of the attack. Sometimes, false hearing occurs, and the patient imagines he perceives voices and sounds when nothing of the kind exists."

The eyes and their functions are more rarely affected. If there is active febrile excitement, there is often increased sensibility to light, mostly in the early stage of the disease. Active injection of the conjunctivæ is not often seen.

Imperfect and perverted vision occurs occasionally, but it is not common. Like the dizziness and ringing in the ears, this not unfrequently comes on, temporarily, when the patient sits up in his bed.

The sense of taste, as might be expected from the state of the tongue, and the loss of appetite, is either dull or perverted. Chomel speaks of patients who chewed, without repugnance, pills composed of medicinal substances, which were very disagreeable during health.

The general cutaneous sensibility is not often affected, to any considerable extent. The feeling of soreness, occurring in the access of the disease, which has already been mentioned, appears to have its seat rather in the muscles than in the skin.

Sec. VIII.—*State of the Muscles.* Irregular spasmodic con-

tractions, or permanent rigidity of certain muscles, occur in a moderate proportion of cases of typhoid fever. The most common are those of the fingers and wrist, to which the term *subsultus tendinum* has been applied. Sometimes they affect the muscles of the face, or that of the diaphragm, occasioning hiccough. Wherever they are seated, they are generally present in the late stages, and near the close of the disease. They are much more common in grave and fatal cases, than in those of an opposite character. Louis found them present, in some form, either that of spasms or permanent rigidity, in one-third of his fatal cases; while of fifty-seven cases, somewhat severe, but terminating in recovery, there were spasms in only six. Of Dr. Jackson's cases, *subsultus tendinum* was noticed in 1 of 3.36, which were fatal, and in 1 of 10.03, which recovered. Permanent contraction of the muscles, generally of those of the arm, is almost invariably confined to cases, which are about to end fatally. Dr. Jackson and Chomel report each one instance of this kind, which terminated favorably. *Subsultus tendinum* seems to be less frequent in children than in adults.[1]

One of the most constant and characteristic phenomena of typhoid fever consists in prostration of the muscular strength. In very many cases, this is extreme, even in the early periods of the disease. A great majority of patients take to their beds at the beginning of the disease, and remain there almost constantly until the commencement of convalescence. They will suffer themselves to be placed passively in a chair, in order that their beds may be made up and aired, but they are impatient and anxious to be returned as quickly as possible. When this prostration is extreme, unless there are great restlessness and distress, or delirium, the patient lies continually in the same position, on his back, entirely passive, with hardly sufficient strength to move his limbs. It is necessary for his attendants to raise him up in bed, and to hold to his lips the cup when he drinks. Conversation, addressed to him, is irksome and fatiguing, and he answers questions with reluctance, and with a painful effort of his exhausted strength. Forget mentions, in very grave adynamic cases, a common position of the patient; his arms extended upon the chest and abdomen, and the hands resting upon the genital organs.

[1] Barthez and Rilliet.

Of nineteen fatal cases observed by Dr. Jenner, "two were able to leave their beds unassisted, and with facility, throughout the whole course of the disease. One of the patients died on the twenty-fifth day of the disease, and the other five weeks after her admission. Two were able to leave their beds with tolerable facility respectively up to the fifteenth and twenty-fourth day of the disease, but the former on the sixteenth and the latter on the twenty-sixth day, were unable, without assistance, to reach the close stool placed immediately adjoining the bed. Five patients could, though with great difficulty, get out of bed unassisted, from the thirteenth to the thirtieth days, while ten were quite unable from the fifth to the twenty-sixth days; there was extreme prostration in eight cases from the fourteenth to the thirtieth days."[1]

I have already remarked, that this feeling of debility is early in its appearance. Chomel says, that patients, in reply to the question put to them at the first visit, how they came to the Hôtel Dieu, always answered "in a carriage, or supported by two friends, for we were not strong enough to come alone on foot." In nearly all the fatal and grave cases, it is very strongly marked; in mild cases, it is still present, but in a more moderate degree. Occasional exceptions are met with. Louis mentions instances, in which the patients kept about for a week, and even a fortnight, some of them continuing their accustomed occupations. Some of these were fatal cases. I have seen one striking instance of this character. The patient did not confine herself to the bed, until the occurrence of intestinal perforation.

This debility, when it is once present, rarely disappears or diminishes, until the close of the disease. A slight increase of muscular strength, shown by turning for a short time upon the side, or by a disposition to sit a little longer than is necessary in the chair, is one of the first and most cheering indications of returning health.

[1] Jenner, &c., p. 26.

## ARTICLE V.

### DIGESTIVE AND ABDOMINAL SYMPTOMS.

I now come to the consideration of a group of morbid phenomena, not less extensive, various, and important, than those connected with the nervous apparatus. I allude to the symptoms consisting in disturbances of the entire complex function of digestion. These symptoms are more characteristic, indeed, of typhoid fever, than those which have just been described. We rely upon them, as one of our surest means of distinguishing between cases of this disease, and those of the analogous form of fever, which will next be described, under the name of *typhus*. For this reason, especially, as well as in accordance with the general plan and object of this history, I shall treat of them particularly, and in detail.

SEC. I.—*Tongue and Mouth.* In a certain proportion of cases, the tongue is but slightly altered in its appearance, and this is true of the disease in all its grades of severity. Even in fatal cases, *if they terminate early*, that is, during the course of the second week, it not unfrequently happens that the tongue is merely covered with a light fur, and is not quite as moist as it is in health. When the disease is very mild, the tongue is often almost natural in its appearance, or covered only with a light, yellowish coat. At other times, under the same circumstances, it is smooth, moderately red, and moist with a tenacious, adhesive matter. This glutinous exudation is, indeed, very common, in all forms of the disease, the severe as well as the moderate. Besides this, there are other changes, which are found in a majority of cases, especially in those which are grave and protracted. Sometimes the tongue, having been covered with a light, or yellowish, moist coating, for a few days, gradually becomes dry and brown in a stripe along its middle, and red at its tip and along its edges. In other cases, or later in these, it becomes dark over its whole surface; sometimes nearly black, glazed, stiff, and crossed by cracks and fissures. Sometimes this dark, dry crust peels off in flakes or patches, leaving the mucous membrane naked, red, and shining. This process of coating and denuding may be repeated several times in the course of a severe and pro-

tracted case. In a small number of instances there is a whitish, aphthous exudation upon the tongue, and also upon other portions of the mucous membrane of the mouth, like that which is often seen in the last stages of phthisis pulmonalis, and some other chronic diseases. It is generally found where the tongue is morbidly red, and only at a late period of the fever, when there is great debility. In these cases, as well as in others, where there is a morbid redness, the tongue is not unfrequently swollen, painful, and tender. Now and then, it is the seat of ulceration. The cracked, brown, and blackish tongue is not so common amongst children as it is in adults.[1]

The patient often finds a good deal of difficulty in protruding the tongue, particularly when it is dry, stiff, and fissured, or covered with the tenacious secretion. Under these circumstances, even if the mind is sufficiently clear, and the will active, the tip and sides stick to the lips, and it is only after repeated efforts that it is finally put out. Not unfrequently, it is protruded with a tremulous motion.

The dryness and redness of the mucous membrane often extend to the different portions covering the posterior fauces, giving rise to more or less difficulty of swallowing, and to other disagreeable or painful sensations. The lips are also often cracked and covered with dry crusts, and the teeth, especially near the gums, are lined with a dark, tenacious sordes. The secretion of saliva is commonly scanty, and its quality changed.

Sec. II.—*Appetite and Thirst.* The desire for food is almost invariably absent, from the beginning to the end of the disease. The very idea of eating is offensive. A return of the appetite is amongst the earliest indications of recovery. The thirst is, in most cases, proportionate to the degree of febrile excitement. Sometimes, especially during the paroxysm of fever, it is urgent. Cool drinks are commonly preferred, but not always.

Sec. III.—*Nausea and Vomiting.* A majority of patients with typhoid fever suffer more or less with gastric symptoms. The most frequent of these are nausea, vomiting, and epigastric distress. Of twenty-four fatal cases mentioned by Louis, there was nausea in thirteen, occurring at various periods of the fever, and

[1] Barthez and Rilliet.

continuing for an uncertain length of time. Of twenty-three fatal cases, vomiting was present in twelve. Nausea not unfrequently occurs at or near the commencement of the disease; but vomiting takes place more frequently at a later period, especially when the matter ejected is of a greenish color and bitter taste, and when there is also present epigastric pain or distress. This combination of symptoms was first particularly noticed by Louis, and, as I shall have occasion to say hereafter, was shown by him to be associated with a peculiar lesion of the stomach. Vomiting, at or near the commencement of the disease, is more frequent in cases of children, than in those of adults.

Pain or distress in the region of the stomach, varying considerably in character and severity, is still more common than either nausea or vomiting. Finally, there are many instances, in which patients go through the fever without the occurrence of any one of these strictly gastric symptoms. In regard to this point, Nathan Smith says: "*Sometimes*, nausea and vomiting take place. Sometimes, the matter thrown up consists wholly of vitiated mucus; at others, it is mixed with bile of an unhealthy color and consistence."[1]

SEC. IV.—*State of the Bowels.* Amongst the most frequent, and when taken in connection with other phenomena amongst the most characteristic, symptoms of typhoid fever, is diarrhœa. This symptom varies very much in different cases, in regard to the period of its commencement, its degree, its duration, and so on. As a general rule, it is most common and severe in long-continued and grave cases, and least so in those of an opposite character. It was present in all but three of Louis's fatal cases. When the disease is mild, it is frequently wholly absent. It varies in severity, from one or two discharges to twenty, or more, in the course of twenty-four hours. It commences at different periods of the fever. Of forty fatal cases, cited by Louis, in which this point was precisely ascertained, diarrhœa was present on the first day of the disease in twenty-two. In others, it begun from the third to the fourteenth day.[2] In mild cases, it is frequently wanting, and, when present, commonly makes its appearance later in the disease, is less urgent, and of shorter continu-

[1] Smith's Medical and Surgical Memoirs, p. 64.

[2] Louis's Researches, vol. i. p. 464, 2d ed.

ance. It is commonly a protracted symptom in severe cases, its average duration, according to Louis, being nearly four weeks. Nathan Smith says: "The latter stage of all severe cases is attended with diarrhœa." In fatal and grave cases, late in the disease, the discharges are often involuntary, and wholly without the consciousness of the patient.

The stools are generally liquid, somewhat turbid, and of a yellowish color, in appearance not unlike new cider. In a considerable number of cases, they are of a dark brown color. Their smell is fetid and offensive. Occasionally, they contain portions of blood, and sometimes free and repeated hemorrhage takes place from the bowels. According to Dr. Jackson, this discharge occurred, in the Massachusetts General Hospital, in about one-tenth of the cases. In seven out of twenty-one fatal cases observed by Dr. Jenner, there was hemorrhage from the bowels. "In one, discharges of blood took place on the sixth and seventh days of the disease. On the tenth, the stools were healthy in appearance, and well formed; and, although they afterwards became watery, there was no return of the hemorrhage. One man passed a small quantity of blood on the eighth, ninth, and tenth days of the disease, and again from the twenty-eighth to the thirty-second—*i. e.* the day of death—the stools between the two attacks of hemorrhage being watery, but free from blood. In one case, blood was mixed or passed with every stool, from the fourteenth to the twenty-first day, the patient dying on the twenty-fifth day. In four cases, hemorrhage from the bowels occurred during the last day or two of life, the patients dying respectively on the seventeenth, twenty-third, twenty-fifth, and twenty-eighth days of the disease. The blood lost varied in quantity from an ounce or two, to two or three pints; in hue, from black to bright red; and in consistence, from a reddish watery fluid to the consistence of treacle, and even solid clots."[1]

It appears, from the researches of M. Taupin, to be less frequent in patients under fifteen years, than amongst adults. He met with but one instance, in one hundred and twenty-one cases; and Barthez and Rilliet, in one hundred and eleven cases, met with none. A more exact estimate of the importance of this symptom, as well as of others, as a means of prognosis, will be

[1] Jenner, &c., p. 32.

made hereafter. Louis says it is exceedingly rare to find any mucus in the dejections.

Dr. Hale, of Boston, thinks that diarrhœa is a more frequent symptom in the typhoid fever of Paris, than in that of New England; and the Report of Dr. Jackson seems to corroborate this opinion. This may be so, but I do not think that the data from which the opinion is derived are sufficiently accurate and positive to settle this matter. It seems very probable that the records of the Massachusetts General Hospital do not always call that condition of the alvine evacuations, *diarrhœa*, to which the term is applied by Louis. It is true, at any rate, that such is the case with the great mass of American practitioners. Certainly, as a general rule, they do not, as Louis does, apply the term *diarrhœa* to that state of the bowels, in which only one or two thin discharges occur in the course of twenty-four hours. In this way, the apparent difference may, perhaps, be accounted for.

Professor Schonlein of Zurich, in 1835, found in the intestinal discharges a great number of microscopical crystals, perfectly transparent, slightly fragile, soluble in muriatic and nitric acids, and consisting chiefly of phosphate of lime, some sulphate of lime, and a salt of soda. Similar crystals were subsequently found, but in much smaller quantity, and much less constantly, in the intestinal discharges in other diseases.[1]

Diarrhœa, according to Barthez and Rilliet, is invariably present in the typhoid fever of children.

Sec. V.—*Abdominal Pains.* Pain in the abdomen is another very common accompaniment of typhoid fever. Its severity and frequency are in pretty direct relation to the severity of the disease, and to the extent of the diarrhœa. Like the latter symptom, the pains in the abdomen are often present at the beginning of the fever. At other times, the pain appears at different periods of the disease. In some cases, it is only elicited by pressure, but more frequently, it is independent of this. It varies in severity, from a dull heavy ache, or feeling of distress, to a severe, colicky griping. It is not often diffused over the whole abdomen, its most common seat being the iliac fossæ, the hypogastrium, and around the umbilicus. This symptom, in many cases, constitutes

[1] Edin. Med. and Surg. Journ., vol. xlviii. p. 253.

the principal source of suffering to the patient, during nearly the entire progress of the fever.

In a certain proportion of cases, generally after the middle period of the disease, and sometimes during convalescence, there is a sudden supervention of very acute pain in the abdomen, at first confined to a small space, but extending pretty rapidly over the entire belly. The pain is accompanied by great tenderness on motion, or pressure; tympanitic distension; rapid, feeble, and thready pulse; extreme distress; nausea and vomiting; pinched and cadaveric features; and these phenomena are speedily followed by death. These are the signs of an acute peritonitis; the consequence of intestinal perforation.

Sec. VI.—*Tympanites.* Flatulent distension of the abdominal parietes is a very common, and to a considerable extent, characteristic symptom of this disease. Its degree and frequency, like the diarrhœa and abdominal pains, with which it is often associated, are, for the most part, proportionate to the gravity of the disease. It is commonly later in its appearance than the other gastro-intestinal symptoms, showing itself, often, during the second and third weeks of the fever. Dr. Hale, in his very excellent paper, remarks that this symptom is found most frequently near the beginning of the disease.[1] This is directly opposed to the result of my own observation, and I think to the best authorities. It varies in degree, from a slight rigidity of the muscles and straightness of the parietes, to the extremest distension; in these cases occasioning, as has already been remarked, by its mechanical action on the lungs, no inconsiderable degree of dyspnœa. It generally persists, after its first appearance, till the fatal termination, or the approach of convalescence; although it is not unusual for it to vary considerably in degree, at different periods of the fever. The flatus rarely passes off *per anum*, and seems to be but little disturbed by the peristaltic motion of the intestines.

There is another symptom connected with the abdomen, which may be mentioned here. It was first particularly noticed, so far as I know, by Chomel, though it can hardly have escaped the attention, I think, of all who have had much to do with the dis-

[1] Med. Com. Mass. Med. Soc., 1839.

ease. I allude to the gurgling sound, which is produced by pressure on the abdomen, especially over the region of the cœcum. If the distension is not excessive, pretty firm pressure, made alternately with each hand, in the manner of seeking for deeply-seated fluid, will rarely fail, I think, to elicit this sensation and sound. It is chiefly interesting as one of the elements of our diagnosis.

## ARTICLE VI.

### MISCELLANEOUS SYMPTOMS.

Under this head, I have still to enumerate and describe a certain number of morbid phenomena, more or less important, and more or less characteristic of typhoid fever, which could not well be grouped in any other manner.

SEC. I.—*Emaciation.* In most cases of the fever, there is a well-marked and gradually progressive emaciation, although it is not often very obvious before the end of the second week. Where the disease is severe and prolonged, this emaciation is often extreme. In cases of great severity, terminating fatally at an early period, this symptom is hardly noticed.

SEC. II.—*State of the Urine.* Modifications in the urinary secretion are generally present. Nathan Smith says: "In the commencement of the fever, the urine is not high-colored, and is considerably copious, being often above the natural quantity, and deposits no sediment. In voiding it into a vessel, it often foams like new beer. As the disease advances, the urine becomes more highly colored, and as it begins to decline, lets fall an abundant sediment. In very severe cases, the patient evacuates his bladder but seldom, allowing the urine to accumulate there in very large quantities."[1] Drs. Dobler and Skoda, in a description of the typhoid fever of Vienna, inform us, that, whenever the disease is at all severe, the urine deposits no sediment, unless it be a slight cloud of mucus. On the subsidence of the fever, there is often a grayish, dirty deposition.

[1] Smith's Medical and Surgical Memoirs, p. 64.

SEC. III.—*Epistaxis.* Hemorrhage from the mucous membrane of the nostrils is quite common in the course of typhoid fever. Louis ascertained its occurrence in twenty-seven of thirty-four patients, who had the fever in a grave form, but recovered. It was present in somewhat less than half of his mild cases. It may occur at different stages of the disease, but it is most common during the early period, or in the first half of its duration. It sometimes occurs but once, but is, in many instances, several times repeated. It is generally small in quantity, sometimes amounting to only a few drops. At other times it is profuse, requiring the use of the tampon to arrest it. It is rarely, if ever, attended with or followed by any relief. It seems to be much less common amongst children, than amongst adults.[1]

SEC. IV.—*Cutaneous Eruptions.* The most frequent and characteristic eruption upon the skin consists in what has been called the lenticular, rose-colored spot. This, indeed, is so common in typhoid fever, and so rarely seen in any other disease, that it has received the name of *typhoid eruption.* It consists of a small spot, not a pimple, slightly elevated above the surrounding skin, not always sensible to the touch, but generally so, about as large, in circumference, on an average, as the head of a pin, and of a bright red, or rose color. When the skin is made tense, or pressed by the finger, the spot readily disappears, returning immediately on the removal of the pressure.

There is good reason to think that this eruption is almost an invariable accompaniment of typhoid fever. It is true, that amongst thirty-six fatal cases, where the eruption was sought for, Louis found it in only twenty-six. So, in the Massachusetts General Hospital, Dr. Jackson found, during the years 1833, 1834, and 1835, the rose spots in only two-thirds of the patients. But it is very probable that, in many of these cases, the eruption was either overlooked, or that it had disappeared before the patients came under the care of their respective physicians. All the grave cases, which recovered, cited by Louis, excepting three; and all his mild cases, without any exception, exhibited this eruption. Dr. Hale found the rose spots in one hundred and seventy-seven of one hundred and ninety-seven cases, and in

[1] Louis's Researches, vol. ii. p. 84, 2d ed.

a greater part of the remaining twenty, they were not carefully sought for.[1]

Louis says, in his second edition, that of fifty-four cases, carefully and daily observed, at La Pitié and the Hôtel Dieu, subsequent to the publication of his Researches, the rose eruption was present in all but five. In these it was wholly wanting. I have rarely failed to find it, where it was properly sought for. Dr. Jenner says: "My impression is that the rose spots of typhoid fever are more frequently absent from patients more than thirty years old, than from those of less mature age. I should say they were rarely absent in young persons. This is, however, the reader must remember, merely a general impression."

It appears, from the observations of Rilliet and Taupin, that this sign is as common in early as it is in adult life. It frequently appears a day or two sooner in cases of children. Taupin says that he has never seen this eruption in the course of any other disease amongst children, and he mentions particularly meningitis; of which he has witnessed more than two hundred cases.[2]

It is found on various parts of the body, but much more frequently than elsewhere upon the abdomen and the chest. Now and then, it is seen upon the skin of the extremities and of the face. It is also found upon the back.

The spots vary in number. Sometimes, they are but few—six, eight, or ten. In other cases, they are much more numerous, being sprinkled pretty abundantly over the chest and abdomen.

Dr. Jackson, of Boston, informs me, that he has seen them quite thickly scattered over the entire surface, even that of the limbs. I have this day, August 6, 1842, visited a patient, sick about a fortnight with typhoid fever, who exhibits the spots upon every part of the skin, excepting that of the hands, ankles, and feet. There are not less than twenty upon the face, and as many as forty may be counted on the left arm between the elbow and wrist. Their size varies from that of a small point to a diameter of two lines. Most of them are pretty regular in their oval or circular outline, although a few of the larger ones are less so. They are, many of them at least, slightly but very distinctly elevated above the surrounding skin, and can be readily detected by the finger.

[1] Com. Mass. Med. Soc., 1839.

[2] Louis's Researches, vol. i. p. 106, 2d ed.

The most usual period of their appearance is during the second week of the fever. In a few rare instances, they are seen as early as the close of the first week. Of twenty-five cases, in which this point was carefully noticed by Chomel, the eruption appeared between the sixth and the eighth day of the disease, in two; between the eighth and the fifteenth day, in thirteen; between the fifteenth and the twentieth day, in seven; between the twentieth and the thirtieth day, in four; and on the thirty-seventh day in one.[1] They generally come out successively, one after another, and after remaining, commonly, for little more than a week, they successively and gradually fade away and disappear.

The following is Dr. Jenner's description of the rose spots. "They were slightly elevated. To detect the elevation, the finger had to be passed very delicately over the surface, as they had none of the hardness of the papulæ of lichen, or of the first day's eruption of smallpox. Their apices were never acuminated, never flat, but invariably rounded; their bases gradually passed into the level of the surrounding cuticle. No trace of a vesicle or white spot of any kind was ever detected on them. They were circular and of a bright rose color, the latter fading insensibly into the natural hue of the skin around. They never possessed a well-defined margin. *They disappeared completely on pressure*, resuming their characteristic appearances as soon as the pressure was removed; and this was true from first to last, from their first eruption to their last trace. They left no stain of the cuticle behind; they never passed into anything resembling petechiæ; the characters they presented on their first appearance continued till they vanished. Their ordinary size was about a line in diameter, but occasionally they were not more than half a line, and sometimes a line and a half in diameter. The duration of each papula was three or four days; fresh papulæ made their appearance every day or two. Sometimes only one or two were present at first, ran the course above described, and then one or more fresh ones made their appearance, vanished in three or four days, and were followed by others to last as long. The number of papulæ seen at one time on the surface was ordinarily from six to twenty; though occasionally there was only one, and sometimes more than a hundred.

[1] Chomel, p. 20.

"They usually occupied the abdomen, thorax, and back, but were occasionally present on the extremities. One was frequently noticed on the thorax, over the cellular interval, at the upper border of the pectoralis on either side. A *very pale and delicate* scarlet tint of the skin sometimes preceded the eruption of the papulæ, but never lasted more than a day or two; the skin resembling in tint that of a person shortly after leaving a hot bath. Rose spots were present in nineteen of the twenty-three fatal cases here analyzed."[1]

Another pretty common eruption consists in transparent vesicles, to which the name *sudamina* has been given. These vesicles are circular, or oval in their shape, varying in size from that of a small pin's head, to that of a split pea. They are formed by the presence of a limpid fluid elevating the cuticle. Their most frequent seat is upon the sides of the neck, and about the shoulders and axillæ, though they are sometimes scattered more extensively over the body. Chomel says that he has never seen them on the face. They are most readily seen, when looked at in an oblique direction. They appear late in the disease, being rarely seen before the twelfth day. They usually remain for several days, and gradually disappear. They were present in two-thirds of Louis's cases, where they were carefully sought for, and in the same proportion, whatever was the severity of the fever. Dr. Hale attaches much less importance to sudamina as a diagnostic sign of typhoid fever than Louis and Chomel. He says: "Wherever the skin is for a length of time kept in a state of perspiration, from whatever cause, there sudamina will generally be found." This is far from being in accordance with the observations of Louis and Chomel. Louis says, that of forty patients with other diseases, in all of whom there were copious sweats, only three exhibited sudamina.

Sec. V.—*Eschars.* In this place may be properly noticed the tendency which exists, particularly in grave and protracted cases of typhoid fever, to ulceration of the skin. This is occasionally shown in the formation of ulcers upon the sacrum. In similar cases, it not unfrequently happens that blistered surfaces are attacked with ulceration. They become, especially about the

[1] Jenner, &c., p. 12.

edges, covered with a white or grayish exudation, like that which is frequently seen on blistered surfaces, in cases of protracted scarlatina, and which is commonly called *canker*. The ulceration underneath this matter sometimes becomes deep and extensive, adding, in no small degree, to the irritation of the disease. In some cases, true gangrene occurs, followed by eschars and sloughing.

In a moderate proportion of grave cases, typhoid fever is complicated with erysipelatous inflammation of the skin. I have known this erysipelatous tendency show itself in a disposition to attack the end of the nose. Biles appear, occasionally, upon different parts of the body, on the approach, or after the commencement of convalescence.

I have now completed the enumeration and description of the symptoms of typhoid fever. Some of these symptoms are more important, more frequently present, and more characteristic of the disease, than others. Some, again, are chiefly interesting and valuable as diagnostic, and others as prognostic, indications. It very rarely happens that, in any single case, they are all united. Under different circumstances, and in different cases, they are very variously combined, constituting different grades and varieties of the disease. These varieties might, properly enough, be described in this place; but I think it better to defer this description, until after the anatomical lesions of the disease, and the relations, so far as these have been ascertained, between the symptoms and the lesions, have been given. I shall thus be enabled to present to the reader a more distinct, individualized and unbroken picture of the disease, with its ordinary and average features, than can otherwise be done. The varieties in its march, in its severity, in the grouping and combination of its numerous symptoms, will then be considered, in their place, amongst the other complex elements in the natural history of the disease.

# CHAPTER III.

## ANATOMICAL LESIONS.

CHOMEL, in his very excellent and full description of the pathological alterations in typhoid fever, divides them into two classes, consisting, respectively, of those which are *constant and characteristic*, and of those which are *occasional*. Louis does not attempt to follow any natural or systematic arrangement. In the present history, as a matter of convenience, I shall pursue, as far as this can well be done, the same general order in the succession of subjects, that I adopted in the detail of symptoms; pointing out, under each head, the connections between the symptoms of the disease, and the lesions of the organs, so far as this connection has been ascertained.

## ARTICLE I.

### LESIONS OF THE CIRCULATORY APPARATUS.

SEC. I.—*Heart and Aorta.* The most striking and common alteration of the heart consists in a diminution of its consistence. Louis found this organ natural, in volume, color, and consistence, in one-half of his cases. In seventeen of forty-six cases, the softening was very well marked. Its tissue could be very readily torn and broken down. At the same time, the heart is exceedingly flaccid, assuming, when removed from the body, a collapsed and flattened shape. The softening of the texture, and the general flaccidity, are most commonly found together, though they may exist separately. Under these circumstances, the cut surfaces of the heart have a dull, dry appearance, and the walls of the ventricles are, in most cases, diminished in thickness.[1] These changes in the condition of the heart are usually accompanied

[1] Louis's Researches on Typhoid Fever, vol. i. p. 331.

with alterations in its color. The muscular tissue and the external surface are pale, in many cases, with a violet or livid tinge. The internal surface is sometimes pale, and sometimes of a more or less deep, violet red. The alterations are found more frequently and more strongly marked, in cases which have terminated early, than in those which have been prolonged. Of fifteen cases examined by Dr. Jenner, the heart was firm or healthy in consistence in five; soft and flabby, or flabby only in five; the right ventricle flabby, the left normal, in one. Of four cases no note on this point was made, but the heart was probably healthy. The average duration of the disease in the five cases in which the heart was flabby, was twenty-two days; in the five cases in which it was healthy, the average duration was twenty-eight days.[1]

It would seem that, at the Massachusetts General Hospital, lesions of the heart are of less frequent occurrence. Of twenty-eight cases noticed in Dr. Hale's remarks, only two or three are said to have been "rather flaccid." It ought, however, to be remembered, that this term might be applied to the same condition of the heart by one observer, and withheld by another. There have been differences of opinion, amongst pathologists, in regard to the nature of these lesions. I do not think there is any satisfactory evidence that they are inflammatory.

The aorta is frequently more or less changed in color, on its internal surface. This change existed in somewhat more than one-half of Louis's cases. It consists of a morbid redness, more or less intense, sometimes in the form of bands or patches, sometimes generally diffused over the whole surface, and extending to the bifurcation of the aorta, or even considerably beyond it. This redness reaches through the inner, and affects, though in a less degree, the middle membrane of the cardiac cavities. The intensity of the morbid color is generally in proportion to the softening and flaccidity of the tissue of the heart. It is always found in connection with the presence of blood in the aorta; and it is important to remark, further, that the most extreme cases of softening of the heart commonly coexist with the presence of a dark, soft, non-fibrinous clot of blood in its cavities, or with blood not coagulated, but containing bubbles of air.[2]

[1] Jenner, &c., p. 80.

[2] Louis's Researches on Typhoid Fever, vol. i. p. 333.

The cause and nature of this reddening of the inner coats of the aorta have been the subjects of much investigation and much controversy. There is no place for any account of them here. I will merely say that the opinion of Louis seems to me most in accordance with all the phenomena which enter into the solution of the question; and that opinion is, that this redness is the result of imbibition, by the tissues, of the coloring matter of the blood—the imbibition depending upon a special condition of the blood, or of the tissues, or, perhaps, of both. There is no conclusive evidence, at any rate, that the redness is the result of inflammation.

Sec. II.—*State of the Blood.* The most frequent alteration in the character of the blood consists in the diminution of the natural proportion of its fibrine. In some cases, the cavities of the heart, especially the right, contain fibrinous concretions of a whitish or yellowish color; but more commonly, the blood is in the form of dark coagula, or entirely fluid. Of thirty cases, wherein the blood, contained in the heart and aorta, was carefully examined by Chomel, he found small and scanty fibrinous concretions in six, dark coagula in nine, and dark, fluid blood in fifteen. The occasional presence of air in this uncoagulated blood has already been noticed. According to the observations of Louis, the appearance of the blood, contained in the cavities of the heart, as has just been intimated, varies with the condition of this organ. When its consistence was natural, he found, especially in the right cavities, yellowish or whitish fibrinous coagula, more or less firm; when it was considerably softened, he found non-fibrinous coagula; and when the softening was very great, instead of coagula, he found only a small quantity of fluid blood containing air.

Blood drawn from the veins, during life, rarely exhibits the buffy coat; and when this is present, it is generally soft, gelatinous, or infiltrated, and of a grayish or greenish color. This character of the blood has been particularly noticed by Louis, Chomel, and Bouillaud; and the results of their observations have been abundantly verified by the subsequent and more accurate researches of Andral and Gavarret. They found that, in typhoid fever, the proportion of fibrine in the blood was never increased above its natural standard; but on the contrary that, in many

cases, this proportion was very much diminished; and, furthermore, that the degree of this diminution was very uniformly proportionate to the severity of the disease. These observers found a similar alteration of the blood in the eruptive fevers, while in all cases of simple acute inflammation, the quantity of fibrine was above its natural standard.

## ARTICLE II.

### LESIONS OF THE RESPIRATORY APPARATUS.

SEC. I.—*Lungs.* Neither the symptoms nor the lesions go to show that the lungs play any very important part in the numerous and complicated phenomena of typhoid fever. Louis found them nearly natural in fifteen of forty-six cases; about the same proportion in which he found them so in other acute diseases, excluding, of course, those of the lungs themselves. Chomel found them healthy in ten of forty-two cases. The most characteristic alteration is described particularly by Louis, and, so far as I am aware, had not been noticed by other writers. It is of frequent occurrence in the fever of our own country. It has been called *splenization*, or *carnification* of the lung. The latter term may be well enough, but the former is wholly inappropriate; the appearance of the lung being entirely unlike that of the spleen. The portion of lung thus *carnified*, is of a deep, bluish-red color; it has a tough, leathery feel; the finger penetrates and breaks it down with difficulty; it is wholly destitute of air, and sinks readily in water. When it is cut, the smooth surface is directly covered with a thick, red fluid. This peculiar lesion almost always occupies a circumscribed portion of the lower and posterior lobe of one or both lungs. It is quite unlike, in almost every respect, the second stage of inflammation, although the term *hepatization* has sometimes been applied to it. It is not indicated by any peculiar symptom during life. Dr. Jenner gives the following description of this lesion, which he calls *Lobular non-granular Consolidation.* "Externally, a portion of lung in this condition has a mottled aspect; here and there are patches, varying in size from a single lobule to half or more of a lobe, of a deep bluish, chocolate, violet, or purplish slate color, bounded by a well-defined angular margin, crossed, if it includes more than

one or two lobules; and mapped out into smaller patches, by dull opaque whitish lines. On closer inspection, the outline and the whitish lines intersecting the patches, are seen to be thickened interlobular septa.

"Scattered in the midst of the larger patches, are frequently found one or more comparatively healthy lobules, of a pale brightish pink color, contrasting strongly with the hue of the surrounding tissue. Here and there, near the border of the large patches, may be seen, occasionally, lobules, the *centres* of which have assumed the dusky purplish tint; the *circumference* of the same lobules yet retaining their healthy color. The dark patches feel solid and flabby; the pulmonary tissue, at these spots, has lost the resiliency of health. The pleura covering the lungs either retains its natural appearance, or has a slightly milky aspect. On section, the tissue corresponding to the dark patches, is found to be of a deep purplish chocolate color, gorged with non-aërated bloody-looking fluid, breaks down with little or no increased facility, nay, sometimes appears tougher than in health; has a uniform or nearly uniform section, i. e. there is no appearance of granules, such as are seen in the consolidation and non-consolidated state of so-called vesicular pneumonia; sinks in water, like the patches seen externally; is bounded by interlobular septa; but these divisions, between the consolidated and non-consolidated tissues are less marked, especially the most superficial tier so to speak, of lobules. A minute portion can be cut from the middle of a lobule—the centre of which is dark purple, and the circumference brightish pink—which sinks in water; equally small pieces of pulmonary tissue, from the circumference of the same lobule, float."[1]

Other changes, such as inflammation, usually not extensive; simple mechanical engorgement, taking place during the last hours of life; violet red spots or patches in the infero-posterior portions of the lung; circumscribed abscesses and tubercles are present in a certain proportion of cases. The inflammation is often not discoverable during life, except by its physical signs.

Sec. II.—*Bronchia, Epiglottis, &c.* The mucous membrane of the bronchial tubes is frequently of a more or less livid red

[1] Jenner, &c., p. 86.

color, sometimes with a violet tinge. That of the trachea is occasionally colored in the same manner, but is very rarely the seat of any unequivocal lesion. The same thing is true of the larynx. The epiglottis is more frequently and seriously diseased. In a moderate proportion of cases, it is the seat of ulcerations, extending not only through its investing membrane, but into the fibro-cartilage itself; occasioning, sometimes, extensive destruction of the organ. In other cases, it is simply denuded. These ulcerations are not found where the disease is rapidly fatal. They are frequently productive of some difficulty of swallowing.

Recent lesions of the pleura are very rare. In many cases, there is an effusion of bloody serum, varying in quantity, from a few ounces to a pint or more, occupying both sides of the chest. This exudation probably takes place near the close of life.

## ARTICLE III.

### LESIONS OF THE BRAIN AND ITS MEMBRANES.

From the frequency and severity of the symptoms, consisting in deranged action of the brain, it would have been supposed, as a mere matter of *à priori* reasoning, that this organ would have exhibited corresponding alterations in its appearance. Such, however, is far from being the fact. As will be seen by the details which I am about to give, lesions of the brain are far from being universally present, and, when present, far from being found in any constant relation to the disturbed functions of the organ during life. Of thirty-eight cases, reported by Chomel, in which the brain and its membranes were carefully examined, fifteen presented no appreciable alterations in these organs.[1] The most common changes, in a certain proportion of cases, consist of moderate serous effusion between the arachnoid and pia mater; more or less vascularity of the pia mater itself; a rosy tinge of the cortical substance, and injection of the medullary portion of the brain. Of forty-six cases, Louis found the sub-arachnoid effusion, various in degree, in twenty-eight; vascularity of the pia mater in somewhat less than one-half; the rosy tinge of the cortical substance, uniformly diffused through its entire extent,

[1] Chomel's Leçons de Clinique Médicale, p. 294.

in seventeen, and more or less injection of the medullary substance in all but eight. This injection is generally proportionate to the red color of the gray substance, and both phenomena are most common and strongly marked in cases which terminate early. The serous effusions, on the other hand, are more frequently found in cases that have been protracted. In rare instances, there is a slight increase or diminution in the consistence of the brain, besides some other unimportant and accidental alterations.

In regard to the nature of these several lesions, there is, amongst pathologists, a difference of opinion. Those who still cling to the doctrines of the old and exclusive physiological school, and who are haunted by the perpetual presence of *irritation*, regard the foregoing changes as the evidence and result of inflammatory action. Others think, that not only is there no satisfactory proof of the action of this morbid element, but that there are many and insuperable objections to such an opinion.

There is no ascertained relation between the cerebral symptoms during life, and the pathological conditions of the brain and its membranes, appreciable after death. Delirium and somnolence are found to have occurred as frequently, and to have been as strongly marked, in patients whose brains presented no changes, or exceedingly slight ones, after death, as in those of an opposite character. Again, it is obvious, that these lesions are in no way peculiar to typhoid fever, since they are found almost as frequently in patients dead from other acute diseases, excluding those of the brain itself and its envelops, as in those dead from the fever.

## ARTICLE IV.

### LESIONS OF THE DIGESTIVE AND ABDOMINAL ORGANS.

SEC. I.—*Pharynx and Œsophagus.* In a large proportion of cases of typhoid fever, these organs are found in their natural state. The only lesion of any considerable frequency, which they exhibit, consists in ulcerations of their mucous lining. These were noticed by Louis, in the pharynx, in eight of forty-six cases; and in the œsophagus, in nearly the same proportion. They vary in size, from one to six or eight lines in diameter, are circular or oval in shape, and generally quite superficial. In

many of these cases, there is difficult or painful deglutition. In others, especially where there is delirium, this symptom is wholly wanting, as it sometimes is, under the same circumstances, in cases of ulceration and partial destruction of the epiglottis.

Dr. Jenner found inflammation, with or without ulceration of the larynx and pharynx, in about half of his cases. His analysis leads him to conclude that the laryngeal is secondary to the pharyngeal affection; and that "*in typhoid fever laryngitis, independent of pharyngitis, is extremely infrequent.*"[1]

Sec. II.—*Stomach.* The mucous membrane of the stomach, unlike that of the pharynx and œsophagus, is generally more or less removed from a healthy condition. Louis found it free from any obvious lesion, excepting an occasional slight change of color, in about one-third only of his cases. The alterations of which it is the seat are various. The most common consist of changes in its color, its consistence, its thickness, in mamellonation, and ulceration. These alterations may exist separately, or, as happens more frequently, two or more of them are found together. The most common change of color consists of increased degrees of redness. This redness is of various shades, occupies different portions of the stomach, most commonly the great tuberosity, and seems to be dependent on different causes. Sometimes, even when not connected with any other change in the membrane, it is, probably, the result of inflammatory action; but, in many instances, there is sufficient evidence that such is not the case.

Softening of the mucous membrane, sometimes existing as a simple lesion, is frequently associated with a diminution of its natural thickness. This alteration, either simple or complicated, is found in all parts of the membrane, but it is oftenest confined to that of the cardiac extremity. Of fourteen cases mentioned by Chomel, the softening was limited to this region in ten. In some cases, it exists in separate bands; in others, it spreads over a continuous portion of the stomach. The thinning occasionally extends through the membrane, resulting, of course, in its entire destruction. The softening with thinning is found, nearly always, in those cases which terminate before the twenty-fifth day of the fever.[2]

[1] Jenner, &c., p. 49.

[2] Louis's Researches on Typhoid Fever, vol. i. p. 173, 1st ed.

Ulcerations of the mucous membrane are present in a few instances. Louis found them in four of forty-six cases. Of forty-two cases quoted by Chomel, they were not found in any. These ulcerations are small in size, superficial, and not very numerous. There is another pathological state of the gastric mucous surface, to which the name *mamellonation* has been applied. This lesion consists of small elevations of the membrane, pretty regularly circular, or oval in their form, and scattered thickly, and in considerable numbers over different portions of the stomach. This peculiar condition generally exists, in connection with other alterations, especially with softening, and increased redness. Like most of the gastric lesions, it is oftener present in cases which terminate early, than those which are prolonged.

Louis has taken great pains to ascertain the relationship, if any such exists, between these various pathological states of the gastric mucous membrane, and the gastric symptoms. The result of his inquiries is this: that in a considerable number of cases the several lesions, separately or combined, are found after death, when there had been no gastric indications of their presence during life; and that epigastric distress, either alone, or with nausea, not unfrequently has occurred in cases where the mucous membrane of the stomach was found in a healthy condition. All the cases, however, in which there was epigastric distress, accompanied by repeated vomiting of bile, exhibited more or less extensive disease of the membrane.[1] So far as the absence of any constant relationship between the lesions of the stomach and the gastric symptoms is concerned, the conclusions of Louis are abundantly sustained by the researches of Chomel.[2]

Sec. III.—*Small Intestines.* In all cases of typhoid fever, there is lesion of the small intestines. This lesion is peculiar. It is found in no other disease. It is generally extensive. Constituting, as this lesion does, the characteristic, and, of course, the most interesting and important pathological element of typhoid fever, I shall describe it with all possible accuracy and completeness. Before proceeding, however, to do this, I will more briefly

[1] Louis's Researches on Typhoid Fever, vol. i. p. 457, *et seq.*, 2d ed.
[2] Leçons de Clinique Médicale. Par A. F. Chomel, p. 247, *et seq.*

enumerate certain other occasional changes that are found in the small intestines.

The duodenum is not often the seat of any very considerable disease. Not unfrequently, it is entirely natural; at other times the mucous membrane is morbidly red, softened, and, very rarely, the seat of a small number of minute, superficial ulcerations.

The small intestines are moderately distended with flatus, in a few cases. Their contents consist, commonly, of a considerable quantity of mucus, especially in the upper portion, and of liquid bilious matter, of a light yellow or orange color, sometimes tinged with red. In cases where there has been hemorrhage from the bowels, blood, either coagulated or dark colored, and grumous, is found in the intestines.

In many of these same cases, and in some others where there has been no hemorrhage, and where no blood is found in the intestines, the mucous membrane is the seat of sanguineous infiltration. This condition has been particularly described by Chomel. I have seen it more extensive, and more strongly marked in two cases of death from acute jaundice, in both of which there were hemorrhagic discharges from the bowels, than in typhoid fever. It may exist to the extent of only a few inches, or of several feet. It is generally continuous, not in patches or zones. The color of the membrane ranges from a rose to a very dark red, and it has a peculiarly brilliant and trembling or quivering appearance, like jelly. Chomel found this lesion in seven of forty-two cases. He is very confident that it is intimately connected with hemorrhage from that portion of the membrane which it occupies.[1]

The mucous membrane, exclusive of the elliptical plates and the isolated follicles, is, in a majority of cases, more or less changed in color. In many, it is preternaturally red. This redness is sometimes continuous, and extends through a large portion of the intestinal tract; at other times, and more frequently, it exists in patches or zones. Occasionally, the color is grayish; this is particularly the case when the disease has been protracted to a late period.

The consistence of the membrane, like its color, is found, in a moderate proportion of cases, quite natural. Oftener, however, it

[1] Leçons de Clinique Médicale. Par A. F. Chomel, p. 252, *et seq.*

is more or less diminished; sometimes so much so as to resemble an unorganized pulp, spread, like a layer of paste, over the subjacent tissue. This softening is in some cases quite simple; that is, it is not connected with any other appreciable alteration. In others, the membrane is, at the same time, reddened or thickened, or both. It is the opinion of Louis, that these two forms of softening are unlike in their character and causes. The latter he considers to be inflammatory; the former he thinks may depend on different causes, but that it is not the result of inflammation. In a part, at least, of the cases, he is inclined to regard it as the result of a post-mortem or cadaveric change.

The invariable and characteristic lesion found in the small intestines, to which allusion has been made, consists in alterations, differing somewhat in different cases, of the *elliptical plates*, or *Peyer's glands*. The condition in which these bodies are found varies with the duration of the disease, with the distance of the plates themselves from the ileo-cœcal valve, and with other circumstances, the nature of which is unknown. Without entering into so minute and elaborate a description of the several forms of this lesion as has been very properly given in the original researches of Louis and Chomel, I shall enumerate the principal and more striking varieties.

In a small proportion of cases, consisting of those which terminate early, the elliptical plates, together with the subjacent cellular tissue, are merely increased in thickness, with redness and softening. This increase of thickness is such, that the edges of the plates project to a distance of from one to two or three lines above the surrounding mucous membrane. Sometimes, the hypertrophy of the plates and of the subjacent tissue is quite simple, the color and consistence of the membrane remaining unaltered. This simplest form of the lesion, that I am now describing, like all the others, which are more complex, is invariably found most advanced, and most strongly marked, at the lower extremity of the ileum. Each successive plate, as we go upward along the intestinal tract, from the ileo-cœcal valve, is less and less profoundly altered, till we arrive at those which are in a natural condition. The number of plates, thus changed, is very various; sometimes extending to fifteen or twenty, and at others limited to one or two, and these always in the immediate neighborhood of the ileo-cœcal valve. Louis says that, in two-thirds of the

cases, the number of plates, more or less altered, is from twelve to forty.

The surfaces of the thickened plates frequently present a granular or finely mamellonated appearance, occasioned by an enlargement of the gray orifices of the cryptæ, which go to make up the plates. This condition becomes very manifest when the gland is detached from its subjacent tissue, and held between the eye and the light. At other times, the surface of the thickened membrane, corresponding to the plates, is quite smooth and level.

In a great majority of cases, the plates, instead of being merely thickened, with or without redness and softening, are more or less extensively the seat of ulcerations. These ulcerations vary very much in size and in number. It frequently happens, for instance, that in proceeding from above downwards, in our examination, after having passed over several plates, simply thickened, we come to one of them in which there is a single, circumscribed ulceration, with perpendicular edges, extending more or less deeply into the thickened tissues. As we go on towards the termination of the intestine, the ulcerations become more and more numerous and extensive, till at last, for several inches next to the valve, the plates are entirely destroyed, and we find only ulcerations, corresponding to their sizes and shapes, occupying their places.

These intestinal ulcerations are commonly more or less regularly rounded or oval in their shape. Sometimes, however, their borders are irregularly jagged, and angular. So their edges are, in most cases, pretty regularly perpendicular and smooth, but sometimes they are ragged and shreddy. The bottoms of the ulcerations vary, of course, with their depths. They consist, sometimes, of the cellular tissue immediately under the mucous membrane; sometimes of the muscular coat, and sometimes of the peritoneal covering. Occasionally, this covering itself gives way, perforation takes place, and the contents of the intestine are discharged into the cavity of the peritoneum. Louis found this lesion in eight of fifty-five cases. Chomel quotes two instances of its occurrence, in his clinique at the Hôtel Dieu; in one of which, however, the perforation took place in the large intestine. The perforation is usually single, small in diameter, and near to the termination of the ileum. In one of three cases, mentioned by Dr. Hale, it was at the distance of forty-four

inches from the ileo-cœcal valve. It generally takes place at a late period of the disease. Perforation occurred in three of Dr. Jenner's twenty-three cases, respectively on the seventeenth, thirty-first, and forty-second day of disease. "The perforation in all three took place through the floor of an ulcer seated on one of the agminated glands. In two of the three, perforation occurred in the lower nine inches of the ileum; in one, three feet above the ileo-cœcal valve. In two of the three, the coats of the intestine were destroyed through their whole thickness, at another spot from that at which the perforation, which proved fatal, took place; but the contents of the bowel had been prevented escaping through the aperture first formed by adhesion, in the one case, to the fundus of the uterus, and in the other, to a fold of the intestine. It will be observed that, in one of the three cases certainly, the fatal perforation took place after the termination of the fever."[1] It is a very singular fact, that this fatal accident commonly occurs in the course of very mild, or almost entirely latent, forms of the fever. This was the case in ten of twelve instances cited by Chomel. Chomel suggests that the distension of the intestines by gas may frequently be the immediate cause of perforation. This seems hardly probable, since the greatest distension is usually confined to the large intestine, while perforation is most frequent in the small. It has occurred to me that the frequency of the accident in the mildest, and in some degree, latent form of the disease, might possibly be occasioned by mechanical causes, especially by efforts of the patient while standing and walking.

This accident is much less common in children than in adults. Taupin met with it only twice, in one hundred and twenty-one cases; and Barthez and Rilliet only once, in one hundred and eleven cases.

There is another peculiar appearance of the diseased plates, which is found in a certain proportion of cases; according to Louis, in somewhat less than one-third. This seems to consist in a morbid change or transformation of the submucous cellular tissue. Instead of being simply hypertrophic, with or without redness and softening, as in the cases already described, there is deposited in the tissue a substance of a yellowish color, destitute

[1] Jenner, &c., p. 61.

of any traces of organization, presenting a surface somewhat glossy when cut, and about as hard and friable as crude tubercle. The term *typhous matter* has been given to this morbid deposit. This peculiar condition was observed in several subjects, during the grave epidemic of 1833–4, in the city of Lowell; and in accordance with the fact, previously noticed by Louis, it was most frequent and striking in cases which terminated quite early. This would seem to indicate that the alteration in question is connected with the more severe and rapid forms of the disease.

M. Forget describes the lesion of Peyer's glands under six different forms. The first of these he calls the form *pointillée*, the punctated or pointed form. It was first described by Rœderer and Wagler; and its appearance compared with that of the beard newly shaven. This condition of the glands has been noticed by Andral, Chomel, Forget, and others; but there is no satisfactory evidence that it is especially connected with typhoid fever. It is doubted even whether the appearance is really pathological. It is not often met with.

The second form is the *reticulated*. The glands are rarely thickened; their color varies from that of a grayish red to a deep red, and their consistence is greatly diminished. The substance of the glands presents the appearance of a pretty regular network, resembling somewhat the pulp of a cherry. This appearance is more striking when the glands are examined under water. It has been suggested that this form may be constituted by the first, or at least by the earlier, changes which take place in the glands.

The third is the *honey-comb* form. It is the *hard* form of Louis, and has been already described.

The fourth form is the *pustular*. The peculiarity of this form consists simply in the size and shape of the altered glands. These are small and circular, thus occasioning the pustular appearance. Cruveilhier and Forget think that this pustular form is generally connected with very grave and rapidly fatal cases of the disease.

The next form is the *gangrenous*. Forget says it is always the result of the *hard* or *honey-comb* form. The substance of the gland loses its vitality; it becomes of a yellowish or greenish color; its edges, growing ragged and shreddy, are detached; and

finally the entire gland is thrown off, leaving the subjacent muscular or serous tissue exposed.

The sixth is the *ulcerated* form. This has been already described with a sufficient degree of minuteness.

These lesions of the follicles, both isolated and agminated, can very generally be recognized through the outer or peritoneal coat of the intestine. This coat, at the points corresponding to the thickened and ulcerated glands, is frequently of a reddish or bluish color, sometimes injected, or even covered with a layer of fibrine; and the thickened glands can, in most cases, be distinctly felt by the thumb and finger, as chancres, says Forget, can be felt through the prepuce.

Dr. Jenner, after a careful examination and analysis of these lesions in twenty-three cases, sums up the results in the following conclusions:—

"1. That ulceration of the solitary and agminated glands may commence in two modes; on the one hand, by softening of the mucous membrane, abrasion of the extremely softened superficial tissue, and then enlargement of the breach of continuity thus formed, in depth and extent, by simple ulceration; on the other, by sloughing of a portion of the submucous tissue containing the before-described deposit, and of the mucous membrane over it, and then extension of the ulcer in breadth and width, by the separation of minute sloughs from the edges of the breach of continuity, left after the separation of the slough first formed.

"2. That when the whole of the deposit has sloughed out, no fresh deposit is formed; and that, consequently, as the whole of that deposit is seated in the submucous tissue, destruction of the muscular fibres of the intestine must be the result of simple ulceration.

"3. That resolution of the disease affecting the patches may in some cases occur before ulceration has taken place.

"4. That ulcers of considerable size may heal.

"5. That no contraction follows, within a short period, the healing of the ulcers.

"6. That ulcers dependent for their origin on the presence in the system of the fever poison, may, after the fever has run its course, continue to spread, retard recovery, and even cause death by perforation.

"7. That while some of the ulcers are undergoing the healing

process, others may be spreading; or, as Rokitansky says, may pass into the state of atonic ulcers.

"*These atonic or simple ulcers, left after the termination of the fever, are a frequent cause of lengthened duration of illness in cases of typhoid fever.*"[1]

I have spoken of this lesion of the glands of Peyer, in some of the forms which have now been enumerated, as invariably present in typhoid fever. I have also spoken of it as characteristic of this disease. The question of the absoluteness of this pathological law—of the constancy of the relationship between the intestinal lesion and the group of symptoms by which we recognize the disease, during life—will be further considered, when I come to treat of the diagnosis of typhoid fever.

The only remaining alterations found in the small intestine, of which it is necessary to speak, are those of the isolated follicles, or Brunner's glands. Louis found them more or less diseased, in twelve of forty-six cases. They are subject to the same changes which have just been described, in connection with the elliptical plates, and, like the latter, they are most numerously and most profoundly altered, in proportion to their proximity to the ileo-cœcal valve.

In this disease, as in most others, it sometimes happens that death takes place, unexpectedly, from unknown causes, or from indiscretions in diet and regimen, after the establishment of convalescence. These occurrences have enabled us to ascertain the appearances of the diseased glands, during their march towards their original, healthy condition. The deep red tint, characteristic of acute inflammation, is found, in these cases, to have given place to various shades of gray, ash color, brown, and blue. The edges of the ulcerations, if such have existed, are smooth and flattened, passing off imperceptibly, each way, into the bottoms of the ulcers, and into the adjacent healthy membrane. These cicatrizing ulcers are always confined to the lower portion of the intestine. Of forty-two cases, Chomel found eleven, in which there was either partial or complete cicatrization of the ulcerated glands; and in all these, the cicatrization was limited to the last six or eight inches of the ileum. It would seem to be very certain that the process of restoration in the diseased glands

[1] Jenner, &c., p. 60.

follows the same march, from the ileo-cœcal valve upwards, which is so evidently followed in the development of the lesions themselves.

It is the opinion of Chomel that, where the cicatrization of the ulcers is complete, all traces of the lesion finally disappear. He says that, in the numerous autopsies at the Hôtel Dieu, in many of which there was good reason to think that the subjects had formerly had typhoid fever, there were never found any obvious proofs of old ulcerations, in the form of remaining cicatrices. It is reasonable to suppose that, in many cases, especially in mild forms of the disease, the local lesion terminates in resolution, there having been no loss of substance, either by ulceration, or gangrene.

Sec. IV.—*Large Intestine.* There are only two alterations of the large intestine, especially connected with typhoid fever. These are its distension by flatus and ulcerations. The flatulent distension is present in a large proportion of cases. It is sometimes very great, pushing up the liver, the stomach, and the diaphragm much beyond their usual positions, and accounting for the extreme tympanitic enlargement of the abdomen during life. Louis found this meteorism of the large intestine most frequently present and most strongly marked in cases which terminated between the twentieth and thirtieth day.

Ulcerations are found in about one-third of the cases. They were present in twenty-three of seventy-four examinations, made by Louis and Barth. They are generally small in size, more or less regularly rounded, not very numerous, more superficial than those of the small intestines, and occupying, most frequently, the cœcum, though not confined to this portion of the large intestine. This lesion is most common in cases terminating late in the disease. In a small number of instances, the sub-mucous cellular substance of the isolated follicles is found to have undergone the same yellowish transformation that has already been spoken of as occurring in the elliptical plates.

The mucous membrane of the large intestines is sometimes healthy throughout. At others, it is reddened, or thickened, or diminished in consistence. There is nothing, however, in these last-mentioned alterations, in any way peculiar to typhoid fever; since they are found as frequently in many other acute diseases

as in this. The contents of this portion of the alimentary canal are usually thin, and of a yellow or greenish color.

As to the relation between the intestinal lesions, on the one hand, and the various abdominal symptoms on the other, I have but little to say. It would be unreasonable to suppose that such a relation does not exist. There can be no doubt that the diarrhœa and the abdominal pains are connected with the different lesions of the intestinal canal. It is, nevertheless, sufficiently evident that this relation is far from being constant and invariable. In this, as in almost all other diseases, the violence of the symptoms, the perturbations and perversions in the functions of the disordered organs, are not to be measured, exclusively, by the appreciable pathological alterations which may exist in the organs themselves. Other elements and other influences, many of them obscure and difficult to seize and to estimate, are concerned in the production of the symptoms. We thus find in typhoid fever that, although there may be a general relationship between the abdominal symptoms and the intestinal lesions, sometimes the lesions are almost entirely latent; they are not revealed by any characteristic symptom during life. Occasionally, extensive ulceration of the elliptical plates, with changes of the mucous membrane, may exist without giving rise to much diarrhœa or to any other prominent abdominal symptom.

Sec. V.—*Lymphatic Glands.* The glands of the mesentery are always found more or less changed; according to their position, and according to the period at which the disease has terminated. Where death takes place before the expiration of the third week, they are increased in volume, diminished in consistence, and of a rosy, or red, color. If life is prolonged beyond this period, the volume is found more nearly natural, the softening is less marked, and the red color is supplanted by various shades of gray, and violet. In some of them, there are found small yellow points of a purulent deposition. The diseased glands correspond, very nearly, to the altered elliptical plates; those nearest the ileo-cœcal valve being most changed in their appearance. In a few instances, the glands are moderately enlarged, softened, and reddened, opposite the upper plates of the intestine, which continue healthy.

The glands of the meso-colon are also affected in a similar

manner, but less extensively and less constantly. The same observation, with the same qualification, is true of the other lymphatic glands of the body. It is also true that these glands are rarely changed from their healthy state in any other acute disease.

SEC. VI.—*Spleen.* The spleen is almost always more or less altered in its appearance. The most constant change consists in an augmentation of its volume. In many cases, it is three or four times as large as it is in its natural state. It is, also, very generally diminished in consistence. This softening is sometimes extreme, so that the parenchyma of the organ is reduced almost to an inorganic, pulpy mass. The increased size of the spleen, and its softening, frequently exist together, but not always. The cases in which this happens most commonly, and in which the two lesions are strongly marked, are those terminating most rapidly. The color of the spleen is very often changed from its healthy appearance, though not so uniformly as its volume and consistence. It is generally darker than natural, of a deep, bluish brown, and sometimes almost black. These changes of volume, consistence, and color generally extend uniformly throughout the whole substance of the spleen. Louis found this organ in its natural condition, only four times in forty-six examinations. All the alterations to which it is subject are most strongly marked in those cases which terminate before the thirtieth day.

I have avoided, for the most part, the elaborate discussion of questions relating to the nature and causes of the various lesions which are found in typhoid fever. It may be well, however, to observe here that these alterations of the spleen can hardly be attributed to any inflammatory action. The reasons adduced by Louis for this opinion seem to me to be sufficiently satisfactory. Pus, the most unequivocal evidence of inflammation, is never found; the serous envelope of the spleen is unaltered; and the softening and enlargement affect uniformly the whole substance of the organ; which, so far as all analogies enable us to decide, would not be the case, if these lesions were the result of inflammatory action. In the present state of our knowledge, it is enough, perhaps, to say, that these alterations of the spleen, in typhoid, as well as in other fevers hereafter to be described, depend upon some special and peculiar cause connected with the

diseases in which they occur, the nature and operation of which are unknown to us; and further, that the lesions seem to be associated with that pathological element, so obscure in its nature and causes, but so extensive and fatal in its results, to which the term *congestion* has been applied; and not with that other element, to which the term *inflammation* has been applied.

Sec. VII.—*Liver.* The only alteration of any considerable frequency, in the liver, consists of softening. This existed in about one-half of Louis's cases; but, inasmuch as it was found oftenest during the warm season, it may be that, to a considerable extent, at least, it is a cadaveric phenomenon, resulting from commencing decomposition. In a certain proportion of cases, the color of the liver is paler than natural, and it is less filled with fluids; less frequently, it is darkened and reddish, and moderately engorged with blood. Andral found the liver almost constantly healthy.[1]

There is no constant or uniform alteration in the qualities of the bile contained in the gall-bladder. Oftentimes, it is found reddish, greenish, and abundant; at others, it is darker, of various shades, less liquid, viscid, and less abundant. Occasionally, the mucous membrane, lining the gall-bladder, is manifestly inflamed, and the bladder contains pus. There is nothing in the condition of the liver, or of its secretion, at all peculiar to typhoid fever.

Sec. VIII.—*Pancreas; Salivary Glands; Urinary Apparatus; and Sexual Organs.* These several parts are generally found in a healthy state, and the occasional lesions which they exhibit are such as occur in other acute diseases.

The accurate and extensive researches of Rilliet and Taupin have shown that the same anatomical lesions are found in patients under fifteen years of age as in adults. The differences in this respect between the two classes of cases are too few and unimportant to make it worth while to notice them in detail. The intestinal ulcerations seem to be somewhat less numerous and extensive than in adults; and a little later, perhaps, in their occurrence. The yellow, hard, friable matter is rarely met with.

[1] Andral's Clinique Médicale, vol. iii. p. 579.

## ARTICLE V.

### GENERAL REMARKS.

Such are the conditions of the several organs and tissues of the body in typhoid fever. It will be seen, from the detailed descriptions of these organs and tissues which has just been given, that the lesions in this disease are numerous and profound. Its pathological anatomy corresponds, in complexity, variety, and extent, to its symptomatology. There are, indeed, few if any diseases of an acute character and of common occurrence, in which this complexity, variety, and extent of symptoms and pathology constitute so prominent and so striking a feature as in this.

Some of the lesions, as has already been said, are more or less *accidental;* that is, they do not necessarily constitute any part of the pathological anatomy of the disease. They are not constantly present. Many of these, however, such as the changes in the mucous membrane of the stomach, and the alterations of the spleen, are of very frequent occurrence, and, we have good reason to believe, play generally an important part in the pathology of the disease. Other lesions are not accidental, but *essential;* necessary to the disease. They always enter into its composition. They make up one of its constituent elements. They are invariably present. This is the case with the alteration of the elliptical plates of the small intestine, and the lymphatic glands of the mesentery, corresponding to these altered plates.

The real and relative importance of the several lesions, accidental and essential, is a question, in the actual state of our knowledge, not susceptible of absolute and positive settlement. It is a very natural and philosophical conclusion, perhaps, that the essential and constant lesions are more important than those of an opposite character. This is true, of course, so far as diagnosis is concerned; so far as the fixing and identification of the specific disease is concerned; but it is very questionable whether these lesions exert a more powerful influence upon the rapidity and the danger of the disease than some of the others. It seems, indeed, very probable that, in many cases, life is destroyed, or the disease is rendered dangerous and severe, by the successive

development of these secondary alterations, rather than by the extent and gravity of the essential lesions alone.

The order of succession in which the several lesions commence and are developed is also a matter not susceptible of very rigorous demonstration. Death almost never takes place, in the disease, before the termination of the first week, and not often so early as this. Still, a careful study and comparison of the pathological appearances which are presented in cases of differing durations will enable us to arrive at a reasonably certain approximation to the truth. There can be but little doubt, I think, that one of the first, probably the first pathological alteration which takes place in the solids, consists in the tumefaction of the elliptical plate, or plates, nearest to the ileo-cœcal valve. This tumefaction is accompanied or followed by other changes—an afflux of fluids, softening of the mucous coat, the hard, yellow typhous deposit in the sub-mucous tissue, and, finally, by ulceration; and these several lesions taking place, first in the plates nearest to the ileo-cœcal valve, gradually and successively extend to those which are farther removed from it. Contemporaneous, probably, or nearly so, with these alterations, are the reddening, enlargement, and softening of the mesenteric glands. The enlargement of the spleen, and the diminution of its consistence, occur, also, there is good reason to think, in the early stages of the disease; and the same thing is probably true, though less constantly, perhaps, of the softening of other organs. The various pathological changes, which are found in the gastro-intestinal mucous membrane, begin and are developed, it would seem, at uncertain and indefinite periods, during the progress of the disease.

As to the relation which exists between these appreciable lesions—one or many of them—and the disease itself, if we may so speak, I have but little to say. This is a question which is wholly theoretical in its character. Its settlement, by different individuals, will depend entirely upon the mode of interpreting the phenomena of typhoid fever, and the relations of these phenomena which they may choose to adopt. One thing, however, we may say, and that with great confidence, and without any qualification; to wit, that typhoid fever *is not a gastro-enteritis*. It may, correctly enough, be called a peculiar *enteritis*, or a *dothinenteritis*, but not a *gastro-enteritis;* and this, for reasons sufficiently obvious. I do not think, however, that we are justified in refer-

ring typhoid fever, considered as a disease—as an integral, though complex, pathological condition, and process or series of processes—to this single local lesion of the intestines. I do not think that we are justified in considering the latter as the exclusive origin and cause of the former, as we consider acute inflammation of the mucous membrane of the large intestines the cause of that other disease—that other integral pathological condition and process, or series of processes—which we call dysentery. The most striking analogies are all against this interpretation. It seems to me much more satisfactory and philosophical, much more in accordance with what is seen in many other diseases, to look upon the lesion of the elliptical plates, not as the local cause of all the other appreciable phenomena of typhoid fever, but as constituting one of the pathological elements, in a very obscure and complex disease; all which elements, and this quite as much as the others, are themselves the result of some morbific agent, or influence, or process, the nature, sources, and operation of which are wholly unknown to us. The lesion of the elliptical plates seems to me to bear somewhat the same relation to typhoid fever, considered as a disease, as that which their several characteristic eruptions bear to measles, scarlatina, and smallpox. In none of these, have we any right to regard the cutaneous eruptions as the causes of the symptoms, and of the other various phenomena, which go to make up the several diseases themselves. I shall have occasion to refer to this subject hereafter.

# CHAPTER IV.

## CAUSES.

THE only causes of typhoid fever, the influence of which has been at all positively and accurately ascertained, are these three, to wit—age; recent residence in a given place; and contagion. In using the word *cause* here, I mean merely to express by it some of those circumstances or conditions amidst which the disease under consideration most frequently occurs. The nature and essence of the actual, producing, efficient cause of typhoid fever, as of most other diseases, are entirely unknown to us.

SEC. I.—*Locality.* Typhoid fever is, evidently, a disease of very extensive geographical prevalence. We have not the means of ascertaining its limits, but there is good ground, I think, for believing that these limits are wider than those which circumscribe the prevalence of any other strictly idiopathic, non-eruptive fever. It is the common fever of the Eastern States. It is questionable, indeed, whether this section of the country is the seat of any other fever, unless it be an occasional sporadic case, or epidemic, of an obscure and doubtful character. The extent of the prevalence of typhoid fever, in the New England States, may be judged of by the following statistics, derived from the bills of mortality for the city of Lowell, for a series of sixteen years, from 1830 to 1846, inclusive. The entire number of deaths from typhoid fever amounted to four hundred and thirty-five. There was only one disease which occasioned a larger number, and that was consumption. The population of Lowell, during this period, increased, pretty regularly, from 6477 to somewhat more than 20,800. The number of deaths, from typhoid fever, annually, varied from five, in the years 1830 and 1831, to forty-four, in 1839. From 1832 to 1846, the smallest number in any single year was sixteen. This was in 1841; in the preceding year, it was twenty-six; in the following year, it was forty-three. In

1846, the mortality went up to one hundred and one. These statements serve to show, at the same time, the importance and frequency of the disease, and the variations in the extent of its prevalence in different years.[1] It prevails, also, more or less extensively, in the Middle and Western States. I have often seen it in Kentucky, where it is sometimes called the *red tongue fever*. It is probably less common in those portions of the United States which are visited by the various forms of intermittent and remittent fever, than in those which are exempt from these diseases; although more extensive and accurate observations than have yet been made are necessary to settle this point. Now that the means for correct and positive diagnosis of the several distinct fevers of our country are becoming more and more generally diffused, there is reason to hope that this, as well as some other circumstances in the natural history of typhoid fever, will soon be satisfactorily established.

In December, 1846, I addressed letters to the editors of the medical journals, published in the Southern and Western States, inquiring particularly as to the existence, in their respective neighborhoods and regions, of typhoid fever. These letters have been promptly and kindly noticed, and they demonstrate very conclusively the prevalence, more or less extensive, throughout many portions of the Southern and Western States, of genuine typhoid fever, its symptoms and lesions corresponding exactly to the common continued fever of France and New England. The interest attaching to this subject induces me to make a few extracts from this correspondence.

Dr. Mattingly, of Bardstown, Kentucky, says that typhoid fever prevailed extensively in that town during the fall and winter of 1846. He enumerates the following phenomena as very constantly present in cases of moderate severity. "Chills; increased local or general heat; accelerated pulse, generally about 100; loss of appetite; muscular debility; more or less diarrhœa; pains in the bowels; dulness of the intellect; more or less delirium; frequent epistaxis; dry, brown, or red tongue, trembling, and with difficulty put out of the mouth; rose-colored spots, or typhoid eruption; twitching of the tendons; a purplish flush on one side of the face, passing over to the other in the course of two or three

[1] An Address before the Mass. Med. Soc. By John O. Green, M. D.

hours; a greater or less degree of tympanites; somnolence, or watchfulness; ringing in the ears, or deafness; one or two exacerbations of fever every day, constantly in the evening, sometimes in the forenoon. These symptoms come on gradually, increasing in violence from day to day, for ten or twelve days, when, after remaining about at a stand for a few days, they gradually give way, and one by one pass off, till convalescence takes place." No one will doubt, I take it, the genuineness of the disease thus described. Dr. M. treated, during the season, fifty-three cases. Of these, twenty-six were between fourteen and twenty years of age; eighteen, between twenty and twenty-five; and nine, between twenty-five and thirty. The average age was nineteen years and a half, nearly. There was hemorrhage from the bowels in nine cases. Death took place in five cases. There was one autopsy, showing ulceration of the elliptical plates, and redness and enlargement of the mesenteric glands.

Dr. Sutton, of Georgetown, saw in his own town and neighborhood, during the year 1846, forty-three cases. He mentions a few trifling differences between his cases, and the disease as described in my book, but none of any importance. He made two autopsies, both of which exhibited the intestinal and mesenteric lesion.

Dr. Wooten, of Lowndesboro', Alabama, says: "There are physicians in our State who contend that we have no fevers except those of a remittent or intermittent type. But my experience justifies me in declaring this to be an error. Typhoid fever does exist here. It appears at all seasons of the year; but I think it is most common in spring and early summer. Its occurrence is far more frequent of late years than formerly. In 1836, I saw but one case of it. In 1837, I had a very serious attack of it myself; I was seen by some half dozen experienced physicians, all of whom spoke of it as a *very rare case.* It has gradually grown more and more prevalent, until it is now looked upon as a rather common disease. It is unnecessary to describe the symptoms of this fever. It is sufficient to say that they are those described by you under the head of *Typhoid Fever;* and that it is unquestionably the disease for which you inquire."

I have a sensible letter from Dr. Core, who practises in Williamson Co., Tennessee. There is one locality in his neighborhood, which, from the extensive prevalence of typhoid fever,

within the last few years, has received the name of *typhoid bottom.*

Dr. Linton, editor of the *St. Louis Medical and Surgical Journal*, in a short but excellent letter, says: "The fever, or variety of fever, of which you speak, prevails here as in Kentucky, though I think it is not, either here or in that State, generally recognized as the *typhoid fever.* It is sometimes called winter fever, or nervous fever, and sometimes it is not dignified with any specific name. But of the fact, that we have here a continued fever, commencing with chilly sensations, headache, and general *malaise*, complicated with diarrhœa, and more or less bronchial irritation, and exhibiting in its course, in many instances, the rose spots, or sudamina, or both, and running a course of from three or four to six or seven weeks, there can be no doubt. I have treated several such cases in this city."

Dr. Leake, of Yazoo city, Mississippi, says the disease has prevailed more or less extensively, for several years, in his neighborhood.

Dr. Coe, of Dekalb Co., Georgia, says, in a letter, dated March 17, 1847: "About one year ago, an epidemic prevailed very generally over a small extent of country, which I determined to be typhoid fever. The section in which it prevailed had been previously healthy; it is elevated, with a poor soil, and has only one small stream passing through it. The locality of which I speak was about twelve or fifteen miles square, and almost every family, and nearly all the members of each family, except old persons and young children, were attacked by the fever. It was most extensive during May, June, July, and August. The number of cases amounted to two hundred. The following were amongst the most common symptoms: Chills, more or less severe; headache, with pain in the back and limbs, which subsided in a few days; thirst, heat of the skin, acceleration of the pulse, and an evening exacerbation; entire loss of appetite; great muscular debility; dulness and confusion of the intellect, passing gradually into delirium; great restlessness, subsiding just before day, to some extent, to commence again about breakfast-time; twitching of the tendons; picking at the bedclothes, or at imaginary objects; occasional epistaxis; ringing or buzzing in the ears; a dry, glutinous, cracked, red, or brown, or blackish tongue, protruded with trembling; dark, thick sordes on the

teeth; diarrhœa, the stools thin and watery, dark or yellowish, sometimes bloody; tympanitic state of the abdomen; gurgling in the right iliac region on pressure. The disease was confined to persons between the ages of ten and forty years. There were twenty-two or twenty-three fatal cases."

Dr. John P. Mettauer describes a continued fever of middle and southern Virginia. From 1816 to 1829, he treated more than four hundred cases. He says the disease prevailed in three forms, to wit—those of *synocha*, *typhoid*, and *typhus*. Dr. Mettauer's description of the disease is not sufficiently minute and detailed to enable us to judge of the reality of these distinctions. The probabilities, however, are that the disease was true typhoid fever, and nothing else.[1] Dr. Austin Flint, of Buffalo, has published an account of the disease, as it prevailed at the little settlement of North Boston, in 1843. The disease seems to have been introduced by a traveller from Massachusetts. Of forty-three persons, constituting the entire population of the village, twenty-eight had the fever between October 19 and December 7. Ten cases terminated fatally.[2]

Dr. Samuel Jackson speaks of its frequent and extensive prevalence in the region of Northumberland, Pennsylvania.[3]

In the statement of deaths in New Orleans, for the last six months of the year 1844, forty-four are set down to *typhoid fever*. In the Report of the New Orleans Charity Hospital for 1844, ninety-two cases are classed as typhoid fever.[4] I do not know how confidently the diagnosis, in these cases, is to be relied upon.

It would seem that the typhoid is the most common and generally diffused fever of the temperate latitudes of the continent of Europe. Certainly it is so of France, where it has been most extensively and thoroughly studied. It seems to be also the common fever of Germany. In vol. xlviii. of the *Edinburgh Medical and Surgical Journal*, there is a notice of this disease, as it is described by several writers, prevailing at Brux in Bohemia, Dresden, Berlin, and at Stangenrod. Burserius describes the disease very fully and accurately, under the title of *slow nervous fever*.[5] Louis saw it at Gibraltar in 1828. It occurs with considerable frequency in the British Islands, although it is not their

[1] Amer. Journ. Med. Sci., July, 1843.
[2] Ibid., July, 1845.
[3] Ibid., Oct. 1845.
[4] N. O. Med. Journ., vol. i. pp. 390, 392.
[5] Inst. Pract. Med., vol. i. p. 479.

most common form of fever. The means, however, for ascertaining, with any degree of precision, the actual extent and frequency of its prevalence, in the several portions of Great Britain, do not exist, for the obvious reason that no distinction has generally been made between this disease and the contagious typhus. It will probably be found to be of more common occurrence, in certain portions of the country, than in others, and at certain seasons or periods of time. This subject will necessarily come before us again in the account which will be given of the investigations that have been made, within the last few years, in regard to the identity, or the non-identity, of typhus and typhoid fever. It cannot, however, be fully settled, without the aid of observations very much more extensive and discriminating than have yet been made. In the mean time, we can only approximate to the real truth in regard to the matter. Typhoid fever seems to have been of common occurrence at Dublin, from 1826 to 1829. Dr. Kennedy states that he found the elliptical patches more or less diseased in a large proportion of cases during this period, presenting a striking contrast, in this respect, to the contagious typhus of 1837. Dr. Stokes also says: "In the epidemic of 1826 and 1827, we observed the follicular ulceration, in the greater number of cases. In many instances, perforation took place, and the whole group of vital and cadaveric phenomena corresponded almost exactly to the dothinenteric affection of the French authors."[1] In Edinburgh, Dr. Christison says: "The intestinal affection has repeatedly presented itself in groups; the *constitutio dothinenterica*, to speak in nosographical language, has repeatedly appeared and disappeared, as a subordinate or intercurrent epidemic, in the course of the more general epidemic, typhus."[2] At Anstruther, in Fifeshire, only thirty miles distant from Edinburgh, this would seem to constitute, as it does in France and in New England, the common form of fever. Mr. John Goodsir, Jr., informed his friend, Dr. Reid of Edinburgh, that for five years he had attended about one hundred cases of fever, annually, in Anstruther, and its neighborhood, amongst which there had been fifteen deaths. In ten of these, he had succeeded in obtaining *post-mortem* examinations; and in all of them he had found the elliptical plates, and the isolated follicles of the lower portion of

[1] Dunglison's Medical Library. [2] Ibid.

the ileum, elevated and ulcerated, and the mesenteric glands, enlarged and softened. In four cases, perforation of the intestine had taken place. From the slight sketch of the symptoms, given by Dr. Reid, as well as from the abdominal lesions, there can be little doubt, I think, as to the character of the fever.[1] It would seem, also, to be very common at Birmingham. Dr. Ward has published an account of a fever which prevailed in certain quarters of that city in the summer of 1837, in all the fatal cases of which, the lesion of Peyer's glands is said to have been present. Mr. Henry Edmonstone has published, in vol. xix. of the *Edinburgh Medical and Surgical Journal*, a short account of the prevailing fever at Newcastle-upon-Tyne, in the years 1821 and 1822; from which it is quite evident that the fever was typhoid. In vol. xli. of the same journal, there is a pretty full and valuable history, by Richard Poole, Esq., of what he calls an *epidemic gastric fever*, which prevailed in Limerick garrison, during the summer of 1833, and which was clearly typhoid fever. Nearly all the most characteristic symptoms of the disease were strongly marked. In the same volume, there is another history, by the same gentleman, of a similar epidemic, which prevailed at Templemore, county Tipperary, Ireland, in the latter part of 1833.

Dr. Stewart remarks that, during the summer and autumn of 1836, the cases of typhoid fever received into the Glasgow Fever Hospital were numerous; while from the month of November, in that year, at which time both the type and the amount of typhoid fever became more formidable, till June, 1838, the period at which his connection with the hospital ceased, not more than a dozen cases, and these at long intervals, were admitted.[2] Dr. Jenner says: "Typhoid fever is a very common disease, especially in young persons; it is the endemic fever of London."[3]

Hillary, in his account of the diseases of Minorca, describes a slow nervous fever, which was, very evidently, typhoid. He says: "The fever put on and appeared in this warm climate, with all the same symptoms as it usually does in England; and as they are accurately described by that learned and able physician Dr. Huxham, in the cooler climate of Plymouth. This slow nervous fever was certainly infectious, for I observed that many of those

[1] Edin. Med. and Surg. Journal, Oct. 1839.
[2] Ibid., Oct. 1840.
[3] Medical Times, 8th paper, p. 11.

who visited, and most of them that attended, the sick in this fever, were infected by it, and got the disease, and especially those who constantly attended them, and performed the necessary offices for the sick."[1]

As to the influence of circumscribed localities upon the prevalence of the disease, very little is known. It is sometimes absent from large sections of the country, for a considerable period of time. Nathan Smith says that for the first eight years of his practice, which was somewhat extensive in the latter part of the last century, near the Connecticut River, in New Hampshire, he neither saw nor heard of a single case of the disease. Subsequent to that time, for a period of twenty-five years, he "never so far lost sight of the disease as to be unable to follow its changes from one place to another, and to tell where it was prevailing." "It seems to possess," he adds, "a migratory character, and travels from place to place; and after remaining in one village for a longer or shorter time, as from one year to two or three, it ceases, and appears in another."[2] It prevails often and extensively in the manufacturing villages of New England. This may, perhaps, be sufficiently accounted for by the circumstances favoring the occurrence of the disease, connected with the population of these villages. These are age, duration of residence, and exposure to contagion. In the city of Lowell, the largest manufacturing place in the Eastern States, containing now, 1852, a population of about thirty-five thousand, an unusual proportion of whom are between the ages of fifteen and thirty, and very many of whom are new residents, the disease has been almost constantly present for the last twenty-five years. In some years and seasons, it has prevailed much more extensively than in others; and not unfrequently, for considerable periods of time, the cases have been occasional and few. It is a very common circumstance for it to exist more extensively in certain portions of the city than in others. But there is nothing fixed in these localities; they are sometimes in one part of the city, and sometimes in another. Instances have frequently been noticed, also, in various parts of the country, in which the disease is confined to a single family in a neighborhood. In these cases, several

[1] Rush's Hillary, pp. 30, 44.

[2] Smith's Med. and Surg. Memoirs, p. 46.

members of the family are sometimes taken with the disease nearly simultaneously; at others, they are affected in succession, one after another, so that the fever may occupy some months in passing through the family. Dr. James Jackson, of Boston, noticed this circumstance, particularly, in a paper in the *New England Journal of Medicine and Surgery*, for July, 1822. He supposes the cause to be in some way connected with the soil of the immediate locality, although not at all depending upon any filth, or decomposing substances, since no such substances could be discovered, and since the houses were often new, clean, in good situations, and occupied by families in easy circumstances. He expresses his disbelief in the agency of contagion, although he says that he has often known the disease to occur in friends, and hired nurses, who had gone from other families to attend the sick, especially when such persons have remained in the house with the diseased subject, for two or three days at least, and generally for a longer time. A remarkable example of the obscurity in which some of the causes of typhoid fever are enveloped, and of its singular and inexplicable connection, at certain times, with certain localities, was exhibited during the winter of 1834–5, in the city of Lowell. In the course of the winter, there were occasional cases of the disease, in almost every part of the city, but by far the greatest number occurred amongst the female operatives of a single cotton mill; and most of these, even, were confined to two rooms. This mill is situated on a line with five others, and in their immediate vicinity. It is about one hundred and fifty feet in length, and five stories high; the rooms occupying the whole length and breadth of the mill, with numerous windows on every side. The ground room was used for carding, and the average number of hands employed in it was thirty-five. *There was not a single case of the disease from this room.* The second story was used for spinning. Four females employed in it went out sick during December; one on the 8th, 9th, 10th, and 15th, respectively. The one who left on the 10th died on the 27th of the same month. The average number employed in this room was sixty. The third story was appropriated to weaving, and the average number of operatives employed in it was sixty-five. Between December 5th, 1834, and January 22d, 1835, *twenty-six* girls left this room; all of whom, excepting some three or four, were ascertained to have had the fever. They left the

tendency to come in and take the place of intermittents and remittents, as these diseases, from the effects of cultivation and from other causes, diminish and disappear. Dr. Austin Flint, of Buffalo, says: "That typhoid fever has, to a great extent, superseded the remittent form, has been a matter of frequent remark for some time; and in a brief enumeration of the distinctive traits of remittent, typhus, and typhoid fever, published by us in the first volume of this journal, we mentioned this as a sentiment generally entertained by the profession in this region. That some allowance is to be made from the fact already referred to, that the boundary lines between the two forms are now much more clearly drawn, and have been rendered more familiar to practitioners, we regard as highly probable; yet we think there cannot be a doubt that a striking change has taken place within a few years past, and that typhoid fever, from having been to say the least of unfrequent occurrence, has become frequent, and is becoming more and more so, remittents diminishing in frequency after the same ratio."[1]

These views are corroborated by some conclusions to which M. Boudin has recently arrived. He says that there exists an antagonism between typhoid fever on the one hand, and intermittent fever and phthisis on the other. "Those localities," he says, "in which the producing cause of endemic intermittents thoroughly modifies the constitution, are remarkable for the infrequency of pulmonary phthisis and typhoid fever. The localities in which phthisis and typhoid fever are particularly prevalent are remarkable for the infrequency and mildness of intermittent fevers contracted on the spot. The drying up of a marsh, or its conversion into a lake, diminishes or prevents intermittent fevers, but seems to dispose the organism to a new series of diseases, in which pulmonary phthisis and typhoid fever, according to the climate, are particularly prominent. After a residence in a thoroughly marshy locality, an individual enjoys an immunity from typhoid fever, the degree and duration of which are in direct proportion to the length and degree of the exposure."

SEC. II.—*Season.* It is not settled how far typhoid fever oc-

[1] Buffalo Med. Journ., Feb. 1847. [2] London Lancet, March, 1847.

curs, with any degree of uniformity, more frequently in one season of the year than in another. The common impression, in New England, is, that it prevails oftenest in the autumn. Dr. James Jackson says, expressly, that such is the fact; although he admits that it may be seen in any month of the year. Nathan Smith does not speak of its occurrence more frequently at one season than at another, and he thinks that he has seen it, not only in every month, but in every day of the year. Amongst the epidemics mentioned by Gendron, one continued from May to October, one from February to May, and one from March to January. The most extensive and fatal visitation of the disease, in the city of Lowell, took place during the winter and early spring. I am very sure, however, that, as a general rule, its annual prevalence is greatest in the autumn. In New England, it is not unfrequently called the autumnal or fall fever. In the Richmond epidemic of 1840, the first case occurred on the 22d of August; there were, in August, six cases; in September, seventeen; in October, ten; in November, six; in December and January, 1841, each, two; and in February, three—the last case commencing on the 28th of this month. The disease then disappeared till the 16th of August, 1841, when it returned. There were, in August, four cases; in September, six; in October, eighteen; in November, seven; in February, 1842, one; in March, seven; in April, one; and in May, two. From May 3d, 1842, to August 4th, there was no new case. The disease then reappeared, and there were, in August, three cases; in September, two; and in October, one.

I have the following statement from Dr. Gilman Kimball, illustrating the influence of season upon the prevalence of typhoid fever. There were admitted to the Lowell Hospital, during seven years, from May 1840, to May 1847, six hundred and forty-five patients with typhoid fever. They were distributed amongst the twelve months in the following manner, to wit: May, forty-one; June, thirty; July, forty-seven; August, eighty-six; September, ninety-two; October, ninety-eight; November, sixty; December, forty-eight; January, thirty-nine; February, forty-three; March, forty; and April, twenty-one. Two hundred and seventy-six cases were admitted during the months of August, September, and October. The number of deaths was twenty-nine, giving a mortality for the entire period of only one in twenty-two and a

quarter. The general treatment is negative and expectant; many of the patients taking nothing but gum Arabic and drinks.

One hundred and eighty-three cases at Strasbourg were distributed amongst the four seasons in the following manner, to wit: spring, thirty-eight; summer, forty-nine; autumn, sixty; winter, thirty-six.[1]

Sec. III.—*Contagion.* The general opinion has been that typhoid fever is not propagated by contagion. Louis, in his first edition, published in 1829, says nothing upon this subject. Chomel, in his *Leçons de Clinique Médicale*, published in 1834, although he himself was inclined to the opposite opinion, says that not more than one physician of a hundred, in France, regarded the disease as contagious. Andral says he never saw any evidence of its contagiousness. Dr. James Jackson says, if he were to answer from general experience, he should say that instances occur in which there is much in favor of the doctrine of contagion; but that, in the very great majority of instances, there is not any such evidence. He relates some cases, occurring amongst the hospital nurses, apparently attributable to contagion.[2] In 1829, M. Bretonneau read to the Royal Academy of Medicine a paper, intended to show that the disease, as it prevailed in the country, was often transmitted from one individual to another. Leuret, about the same time, adopted a similar opinion. The subsequent researches of Gendron, Ruef, Putegnat, and others have confirmed this opinion, and Louis has adopted it in the second edition of his work, published in 1841. Many years, however, previous to these publications, Nathan Smith asserted, in the most positive and unqualified terms, the contagious character of this disease. His essay was published in 1824. "That the typhus fever is contagious," he says, "is a fact so evident to those who have seen much of the disease, and who have paid attention to the subject, that I should have spared myself the trouble of saying anything in regard to it, did I not know that there are some physicians in this country who still dispute the point; one which I think can be as fully demonstrated as that the measles, smallpox, and other diseases, universally al-

[1] Traité de l'Enterite Folliculeuse. Par C. P. Forget, p. 409.

[2] Report, &c., p. 144.

lowed to be contagious, are so."[1] Dr. Smith then mentions several instances, which had fallen under his own observation, where the disease seemed to have been communicated through the medium of a contagious principle. From amongst these, I select the following. "A young man, a pupil of mine, was attacked with the typhus fever, from which he recovered with some difficulty. Some of his family, who lived about forty miles distant, came and took care of him during his sickness. Upon his recovery, they returned home in good health, but soon after sickened with the same disease, and communicated it to others, who had not been exposed in the first instance. From this, it spread to numerous other families in the vicinity, who had been exposed to the contagion. In the whole town where this occurred, there had been no case of typhus fever for many years, till brought there by the circumstance above related."

"During the prevalence of the typhus fever in Thetford, Vermont, a woman went there from Chelsea, about ten miles distant, to visit and administer to a sister sick of this disease. Upon her return, she was herself attacked by it, and soon after died. Others of her family contracted it of her; and in about four weeks there were thirty persons taken down with typhus, all of whom had been exposed to the contagion."[2] Dr. Samuel Jackson, formerly of Northumberland, relates several striking instances, similar to those quoted from Nathan Smith, showing the contagious quality of the disease.[3]

The memoir of M. Gendron, upon this subject, is very full and elaborate. He adduces a great number of instances, similar to those above quoted from Dr. Smith, many of them very striking and conclusive, to show the contagiousness of the disease. He believes that it is transmissible by direct and repeated contact; by the presence of the sick, without contact; that it may be carried from a sick person, and communicated to another by a third, who does not have the disease; and, also, that it may be contracted from exposure to infected clothing, beds, and similar fomites. He regards the first-mentioned mode of transmission as altogether the most common. The indirect transmission of the disease from one individual to another, through the interven-

[1] Smith's Med. and Surg. Memoirs, p. 47. [2] Ibid., pp. 47, 84.
[3] Amer. Journ. Med. Science., Oct. 1845.

tion of a third, he thinks does not often happen, except when it is prevailing more or less extensively as an epidemic. The disease is most frequently communicated to those who are in the closest and most constant relation to the sick—their nurses, and immediate attendants.

According to the observations of M. Gendron, typhoid fever propagates itself very slowly by contagion. The interval between the successive cases varies from three weeks to a month; so that the fever is often several months in spreading through a village, or neighborhood. The period of incubation, he thinks, rarely exceeds eight or ten days, though it sometimes extends to fifteen, and is occasionally as short as twenty-four hours. He is also led to the conclusion that the power of transmission, or communication, does not exist in the early period of the disease; that it is rarely active before the sixteenth day; and, in general terms, that it continues from the third week to an indefinite period, including convalescence. He states some facts which seem to show that the contagious matter of the disease may remain active in a bed for two or three years. He supposes it probable that certain circumstances connected with the disease in the country, such as small, close rooms, and the more constant presence of their attendants with the sick, may render its contagious character more obvious and certain there than in cities. He acknowledges that, in many instances, he has been wholly unable to ascertain the source and origin of the first case, from which the others have been derived; and he admits, in their fullest extent, the great number of examples of immunity from the disease, after the most marked exposure; but he says, very truly, that all this is as frequently seen in scarlatina, a disease unquestionably contagious, as it is in typhoid fever.

It is easy to see that this question is one of great practical importance. It can be fully settled only by further and more various observations; and these observations, for obvious reasons, can be best made amongst the scattered population, and in the small villages, of the country. The paper of M. Gendron is drawn up with great fairness, and it throws much new and valuable light upon the subject, although he sometimes adopts conclusions favorable to his opinions which his facts are hardly sufficient to justify. He is somewhat too ready, in the present state of our knowledge, to consider all cases of the disease, that are in any

way susceptible of being accounted for by the action of a contagious principle, to be, certainly and necessarily, so accounted for.

SEC. IV.—*Exemption from Second Attacks.* There is one other circumstance bearing upon this question, which it is important to notice. I mean the immunity from a second attack which seems to be conferred by the occurrence of the disease. M. Gendron gives several remarkable instances of this exemption. The village of Petit-Gênes, containing only fifteen persons, was visited by typhoid fever in 1826. Twelve of these persons suffered from the fever, and of the three who escaped two had had it previously. In March, 1829, the disease reappeared in the village, apparently introduced by contagion, and was confined to a single family, who had taken up their residence here, subsequent to the year 1826. Five members of this family had the fever, and although they were constantly visited, and nursed during the nights, by their neighbors, the subjects of the disease in 1826, the fever did not extend beyond the family.[1] Chomel says that, of one hundred and thirty patients, at the Hôtel Dieu, no one, so far as this point could be ascertained, had previously had the disease.

The same immunity was noticed by Nathan Smith. He says: "My own personal experience is strongly in favor of the opinion I have advanced of the non-liability of the same individual to a second attack of typhus; for during the twenty-five years, since I first attended patients in this disease, and in that time I have visited many hundreds, and have witnessed its prevalence several times in the same village, I have never known nor heard of its recurrence in the same person.

"I once attended a numerous family, every member of which was sick of typhus, except two, who escaped at that time; but two years afterward, when the disease again appeared in that neighborhood, those two individuals of the family, and those alone, were attacked.

"In another family which I attended, consisting of eight persons, five of the eight had the disease during the autumn and

[1] Mémoir sur les épidémies des petites localités. Par M. Gendron. Journal des Connaissances Médico-chirurgicales. Année, 1834.

early part of the winter, and recovered. The next summer, the remaining three, and another person who had been added to the family after the former sickness, were attacked by it, while all those previously affected escaped."[1] In 1840, there was an extensive local epidemic of typhoid fever in the town of Richmond, Berkshire county, Massachusetts. It was carefully observed by Dr. Jennings; some of the cases were seen by Dr. Alonzo Clark, one of the most accurate and accomplished diagnosticians in the country, so there could have been no doubt as to the true character of the cases. The epidemic reappeared in 1841, and three of forty-six persons suffered with a second attack of the fever. There were forty-six cases during each year.[2] It need hardly be said that this character of typhoid fever, if fully established, although not in itself positive evidence, does, nevertheless, constitute a strong ground of belief, resting on analogy, for the contagious nature of the disease.

Sec. V.—*Epidemic Influences.* Typhoid fever occurs both in a sporadic and epidemic form. Single, isolated cases are not unfrequently met with; extensive regions of country are sometimes entirely exempt from the disease, for considerable periods of time; and again it often prevails, as I have already had occasion to say, either in circumscribed neighborhoods, or over wider ranges of country, so generally and extensively as to assume an epidemic character. The disease, in this epidemic form, as I have before stated, becomes migratory in its character, wandering about the country, attacking one neighborhood this year, another the next, and so on. It frequently happens that the disease returns, at nearly the same season, to the same locality, for two or three years in succession, and then wholly disappears.

Sec. VI.—*Age.* The influence of age in the production, or perhaps in the permission, of typhoid fever is very striking, and very accurately ascertained. Setting aside, for the moment, the early period of life, this disease generally occurs between the fifteenth and thirtieth years. It would seem probable that a majority of cases occur during the seven years between eighteen

[1] Smith's Med. and Surg. Memoirs, p. 52.
[2] Dr. Jennings's Letter to Prof. Clark.

and twenty-five. It is not often seen after the fortieth year, and but few cases are recorded in which it has occurred after the fiftieth year. Of one hundred and thirty-eight cases, analyzed by Louis, fifty-nine were between the ages of twenty and twenty-five years. Of one hundred and seventeen cases, mentioned by Chomel, ninety-one were between the ages of eighteen and thirty years. The average age in two hundred and ninety-one cases, occurring in the Massachusetts General Hospital, analyzed by Dr. Jackson, was twenty-two years and a third, nearly. In these cases, the average age of the females was somewhat more than a year greater than the average age of the males. I do not know whether this difference has been noticed elsewhere by other observers. It may also be stated here, although I shall have occasion to speak of it more particularly when I come to treat of the prognosis in this disease, that the average age of the fatal cases is somewhat greater than of those which recover.

Dr. Jenner says: "Of nearly 400 individuals suffering from typhoid fever received into the London Fever Hospital, three only have been more than fifty years of age; the ages of these three individuals were respectively 51, 55, and 55 years. Two of them were women, one a man. A brief account of the latter case is contained in the present paper. The fact that typhoid fever is very rarely observed after the age of fifty has been confirmed by every observer of the disease."

I am inclined to think that this disease occurs more frequently after the fortieth year of life in the country than seems to be the case in cities. Nathan Smith says nothing about its being particularly prevalent amongst the young; and in Gendron's memoir upon the disease, as it occurred in one of the French provinces, seven cases are mentioned in which the patients were between forty and fifty; three, where they were between fifty and sixty; and four, where they were between sixty and seventy-five years of age. I once saw an unequivocal case in a country-woman sixty-three years old. M. Lombard, of Geneva, relates a case occurring in a woman seventy-three years old.[1]

The opinion which I expressed above, in the first edition of my book, finds a striking corroboration in Dr. Jennings's account of the epidemic at Richmond, Berkshire county, Massachusetts, in

[1] Rep. Ann. de la Soc. Méd. de Geneve, 1843, p. 21.

1840, 1841, and 1842. The whole number of cases, during this epidemic, was ninety-eight; and the average age was thirty-two years and two-thirds, although in this number are included nine children, from five to twelve years old. Forty-five, nearly half, were thirty-five years old, or over; forty-one were forty years old, or over; twenty-one were fifty years old, or over; and eight were sixty years old, or over. The oldest was seventy-one.[1]

Amongst the young, typhoid fever occurs most frequently between the ages of nine and fourteen years. From five to eight, it is less frequent; and still less so at an earlier period. Of one hundred and twenty-one cases reported by Taupin, ten were in children not over four years old; one case occurred at two years; a few, earlier than this; and one, at seven months.

SEC. VII.—*Sex.* The influence of sex in the production of typhoid fever is not determined. Nathan Smith did not notice any difference in the liability of the two sexes. Dr. James Jackson expresses his belief that the disease occurs amongst men much more frequently than amongst women. M. Tardieu observed that, at the village of Ventenges, in France, in 1835, women and children were most frequently attacked. M. Ruef says that, in the epidemic of Bischoffsheim, in 1832, females suffered more extensively than males. These facts may, perhaps, be accounted for by the more frequent and constant exposure to the sick, to which females are subject in their capacity of nurses and attendants. Of ninety-eight cases occurring at Richmond, Massachusetts, thirty-eight were amongst males and sixty amongst females. Of Barthez and Rilliet's one hundred and eleven children with the disease, eighty were boys and thirty-one girls; of Taupin's one hundred and twenty-one cases, eighty-six were amongst boys and thirty-five amongst girls.

SEC. VIII.—*Race.* Whether the liability to typhoid fever is in any degree influenced by race or not, I am unable to say. I have often made the inquiry of practitioners in Kentucky as to the comparative liability of the two races to the disease, but without any satisfactory result. Dr. Mattingly, of Bardstown, is inclined to think that negroes are somewhat less subject to the

[1] Dr. Jennings's Letter to Professor Clark.

disease than whites. Dr. Sutton, of Georgetown, Ky., saw in 1846 forty-three cases; thirteen of these were amongst negroes.[1]

Dr. Lewis, of Mobile, says: "In the winters of 1835, 1836, and 1837, hundreds of negroes died of a low typhoid fever in the middle part of Alabama. All infectious diseases, which prevail usually in winter and spring, attack them more violently than the whites."[2]

SEC. IX.—*Occupation.* There is no evidence that any occupation or profession in itself in any way predisposes to this disease, or preserves from it.

SEC. X.—*Recency of Residence.* The researches of Louis and Chomel show, conclusively, that, in the city of Paris, typhoid fever occurs more frequently amongst new than amongst old residents. This difference is very great. Of Louis's one hundred and twenty-nine patients, all but twenty-seven had resided in Paris only twenty months, or less; forty-four only five months, or less; and only four had resided there from infancy. Of Chomel's ninety-two patients, at the Hôtel Dieu, forty-five, almost one-half, had resided in Paris only one year, or less; and only two had lived there from infancy. I do not know whether this influence has been noticed in our own cities. In the city of Lowell, the disease has generally attacked those who have not been long residents there; but it would not be safe to rely upon this fact alone, since a large part of the young population of that place have been residents, at most, for only a few years. It is very certain, I think, that the influence now under consideration cannot be so obvious in the country as in large towns and cities. No notice is taken of it by that sagacious and careful observer, the late Nathan Smith. I have known the disease to prevail extensively, and in a very grave form, amongst the permanent residents of a country village. This, indeed, is a frequent occurrence in the agricultural regions of our Eastern States, and of France, where the population is generally native and fixed.

SEC. XI.—*Filth, Crowding, &c.* In regard to the action of putrid substances, and to the influence of scanty and unhealthy

[1] Letters to author.

[2] N. O. Med. Journ., vol. i. p. 417.

food, it is sufficient, perhaps, to say, that there is no satisfactory evidence of their operation in giving rise to the disease.

Piorry is of the opinion that a majority of the patients in the Paris hospitals are received from small and poorly ventilated lodgings; but the influence of this cause in giving rise to typhoid fever is not generally admitted, and certainly does not seem to be very evident.[1]

Sec. XII.—*Exposure; Excesses, &c.* The effect of what are usually regarded as the most common exciting causes of many forms of disease, such as exposure to cold, strong moral impressions, errors of diet, and excesses, is not very obvious, in the production of typhoid fever. Of one hundred and fifteen patients, at the Hôtel Dieu, who were examined by Chomel upon this point, seventy-nine were wholly unable to refer the access of the disease to any appreciable cause. It may be added, further, that persons suffering from the disease are generally, immediately previous to the attack, in full health.

[1] Clinique Médicale de l'Hôpital Pitié. Par P. A. Piorry, p. 175, *et seq.*

# CHAPTER V.

## VARIETIES AND FORMS.

TYPHOID fever, like almost all diseases, exhibits many varieties in its character and appearances, some of which, before proceeding to speak of its diagnosis, it is important to notice. One of these varieties depends upon the degree of severity of the disease. Louis divides his cases into three classes; consisting, first, of those which terminated fatally; second, of those which were grave and severe, but which recovered; and, third, of those which were mild. It is obvious enough that this arrangement is somewhat arbitrary; that the several degrees of severity must run off, by imperceptible gradations, like the colors of the spectrum, into each other; and that, oftentimes, the line of demarcation between the classes must be shadowy and doubtful. Nevertheless, the distinction really exists; in a great majority of cases, there is but little difficulty in recognizing and appreciating it; and it is one, not only of convenience, but of great practical value and importance.

It is a very common occurrence for nearly all the more grave and alarming symptoms of the disease to be absent from its commencement to its termination in health; and where its diagnosis is not well understood, these cases are often mistaken for some other disease. Under these circumstances, there is, frequently, but slight febrile excitement; little or no thirst; no affection of the mind; no diarrhœa; no pains in the abdomen. The patient sleeps well, the tongue may be nearly clear, slightly sticky, or covered only with a thin, brownish coat; there is little or no restlessness, or suffering of any sort, and the patient wonders why he is sick, and why he is obliged to lie in bed. But he *is* obliged to lie in bed. Place him in his chair, and he very soon wishes to get back to his bed. On assuming a sitting or upright position, he finds that he does not feel so well; his muscular strength is gone; his debility, though not extreme, is out of proportion to

his other symptoms; and he is troubled, perhaps, with dizziness, or ringing in the ears. It will be found on inquiry that either suddenly, in the midst of good health, or after a few days of vague and indefinite *not being well*, the patient was attacked with a chill, accompanied or immediately followed by pains, generally of moderate severity, in the head, back, and limbs. *None of these symptoms are accounted for by any local disease.* In the progress of the fever, the headache goes off; there may be some degree of deafness; slight somnolence; occasional epistaxis; and, during the second week, the lenticular, rose-colored eruption will probably show itself upon the abdomen and the chest. In this class of cases, after the condition thus described has continued with but little change during a period of from two to three weeks, the strength and appetite begin to return, convalescence is rapid, and the patient is soon restored to sound health.

Between this, the mildest form of the disease, and those of the gravest and most dangerous character, there are, of course, all possible gradations. It is not necessary to describe them particularly. They are marked, in different degrees, by greater prostration of strength; somnolence, followed by or alternating with delirium; twitching of the tendons; picking at the bedclothes, or at imaginary objects; a dry, cracked, trembling tongue, red, brown, or black; tympanitic distension of the abdomen, and diarrhœa.

Dr. Jackson speaks particularly of the predominance of certain symptoms during certain periods of time. In 1828 and 1829, for instance, he had eleven successive cases, in nine of which there was dry tongue; in 1831, this symptom was present in eleven of fifteen successive cases; in 1834, in ten of twelve successive cases; and in 1835, in twenty-two of twenty-seven successive cases. At one period, epistaxis was very common; at another watchfulness, and so on.[1]

There is another phasis, under which the mild form of typhoid fever sometimes presents itself, to which Louis applies the term *latent*. The disease in this form cannot be called absolutely latent, though it is nearly so. The local lesion of the intestine is present; in some cases, it is positively ascertained to have been extensive and profound; but the disturbance and perturba-

[1] Report, &c., p. 136.

tion of many of the functions of the economy, usually accompanying this lesion, and constituting the rational symptoms of the disease, do not take place, or rather they are very obscure. The reason of all this is entirely unknown, and the most we can say about it is that the same thing occasionally happens in other diseases. The latent form of typhoid fever, like the ordinary forms, is commonly marked at its commencement by chills, headache, and moderate febrile excitement. But the patient is often able to sit up, or even to keep about, and there are no prominent symptoms of disturbance in the nervous system, or the abdomen. It is very curious, as has already been observed, that the cases of perforation of the intestine have generally been found to occur in this variety of the disease.

All these different degrees in the severity of typhoid fever are frequently witnessed at the same time, during its prevalence in a given place. But it often happens with typhoid fever, as it does with many other diseases—with the bilious remittent, with true typhus, with scarlatina, with pneumonia, and so on—that during one season, and in one locality, its prevailing character is mild, and its mortality small; while in another season, its character is grave, and its mortality large. Dr. Power, of Baltimore, informs me in a private letter, dated September 4, 1847, that typhoid fever has been epidemic in that city for the last fourteen months, and that it has exhibited more of the adynamic character than usual, and requiring a more stimulating treatment. I have, more than once, seen the disease pretty extensively prevalent, when nearly all the cases belonged to the mildest form. In the epidemic of the city of Lowell, during the winter and spring of 1834–5, the cases were generally grave, and the mortality consequently great. This difference in the severity of the disease during different years is very strikingly shown in the records of the Massachusetts General Hospital. During fourteen years, from 1822 to 1835, inclusive, there were three hundred and three cases of typhoid fever, and forty-two deaths; or one in a little more than *seven*. In the year 1830, the deaths were one in *three and a half;* in 1831, they were one in *fourteen and a half;* and in 1829, one in *twenty-five*. From 1832 to 1835, inclusive, the number of cases was one hundred and twenty-nine, and the number of deaths twenty-two, making a mortality of one in a little less than *six;* while from 1836 to 1838, inclusive, the num-

ber of cases was one hundred and eight, and the number of deaths seven, making a mortality of one in *fifteen*. It is still more remarkable that, from November, 1836, to November, 1838, there were fifty-five successive cases, *without a single death!* It may be added here, that these wide differences in the mortality and severity of the disease, in different years, are not to be accounted for by any differences in the treatment.[1]

Chomel admits several forms or varieties of typhoid fever, not depending upon degrees of severity. These are the *inflammatory*, the *bilious*, the *mucous*, the *ataxic*, and the *adynamic*. They depend upon the relative severity, or predominance, of certain symptoms, or groups of symptoms. In the *inflammatory* form, there are unusual strength and fulness of pulse; great heat and moisture of the skin, urgent thirst, and diminished secretion of urine. These symptoms are especially prominent only in the early period of the disease. According to Chomel, they occur oftenest in the robust, and during the winter months. The *bilious* variety is characterized by some yellowness about the lips and nose; a thick, yellowish, or greenish coat on the tongue; a bitter taste; nausea, and bilious vomiting. Chomel regards this form of typhoid fever—which occurs oftenest, he thinks, during the summer and autumn, and in particular localities—as identical with the bilious fever of authors. There is no doubt, whatever, that, in the confusion worse confounded which has always prevailed throughout the medical world in relation to the diagnosis of fevers, and which is even now but very partially dissipated, typhoid fever has often been described under the name of bilious fever; but it is also quite certain that, if Chomel supposes typhoid fever and bilious remittent fever to be identical diseases, he is widely mistaken. It is easy to see that there may be a bilious variety of typhoid fever, just as there is a bilious form of pneumonia. The *mucous* variety of typhoid fever is not very distinctly characterized, even in Chomel's description of it. It can hardly be said to exist as a distinct variety. The term *ataxic* is applied to those cases in which there are great severity and predominance of the nervous symptoms, such as dulness, stupor, perversions of the senses, delirium, and spasms; or to

[1] Hale on the Typhoid Fever of New England. Communications of the Mass. Med. Soc., vol. vi. part iii. pp. 254, 255.

those in which the disease is masked, and rendered irregular, by a want of the usual correspondence in degree of severity between the more important symptoms. In these cases there may be little or no delirium, or the pulse may be almost natural when the disease is manifestly hurrying on to a fatal termination. The *adynamic* form is marked by extreme debility, and prostration of strength, present at the commencement, or coming on in the course of the disease. The mind is lethargic; the pulse is feeble and soft; the urine and the cutaneous transpiration are fetid; and the disease is often prolonged beyond the fourth week.[1]

[1] Chomel's Leçons de Clinique Médicale, p. 340, *et seq.*

# CHAPTER VI.

## DURATION, MARCH, AND COMPLICATIONS.

### ARTICLE I.

#### DURATION.

It is not often an easy matter to determine, with accuracy, the duration of a disease. Both extremities of the space to be measured are indistinctly defined. This is especially true of typhoid fever. The access of the disease is often gradual, and convalescence establishes itself by slow and almost imperceptible degrees. There is often, also, here another source of difficulty, arising from the state of mind in which the patient is found. His impressions are cloudy, his recollections are indistinct, and he will often date the commencement of his illness several days later than it really occurred. Dr. Jenner says the patient always believes that a longer time has elapsed since the commencement of his disease, or since the occurrence of any given event, than has really passed away.

Bearing these circumstances in mind, I proceed to state, as nearly as has been ascertained, the usual duration of the disease.

Dr. Jackson, following the example of Louis in regard to pneumonia, fixes the commencement of convalescence at the time when the patient is able to take a moderate quantity of solid food, the febrile symptoms having subsided for at least two or three days previous to this period. In two hundred and fifty-five cases, at the Massachusetts General Hospital, between the years 1824 and 1835, inclusive, the average duration of the disease was *twenty-two* days. It was a little less than this in those under twenty-one years old, and a little more in those over. The duration varied in different years, from eighteen to twenty-six days. Dr. Jackson thinks that convalescence commences, in a few rare

instances, as early as the seventh day.[1] Of one hundred and eighty-six cases, at the same hospital, between October 1, 1833, and October 1, 1839, the average duration was *thirty-nine* days.[2] Of sixty-eight cases terminating favorably, cited by Chomel, he says that there was a decided change for the better, in fifty, between the fifteenth and thirtieth days; and in more than one-half of these, it took place between the twentieth and twenty-fifth.[3] Nathan Smith says that he has rarely seen the disease terminate under the fourteenth day from its commencement; and that it rarely extends beyond the sixtieth.[4] Of the forty-six fatal cases, analyzed in the great work of Louis, ten terminated between the eighth and fifteenth day; seven, between the sixteenth and twentieth; twenty, between the twentieth and thirtieth; and nine, after this period.[5] Of forty-six cases occurring in Richmond, Berkshire County, Massachusetts, between August, 1840, and February, 1841, the average duration was nearly forty-one days. It ought to be stated, however, that the duration in three of these cases is stated, respectively, at one hundred, one hundred and seventy-three, and two hundred days. This extreme prolongation was probably caused by some accidental complication. Forty-six cases occurred in the same town, between August, 1841, and May, 1842; the average duration in these being a little more than thirty-three days. No death took place earlier than the twelfth or thirteenth day; in no case of recovery, was the duration less than sixteen days.[6]

## ARTICLE II.

### MARCH AND COMPLICATIONS.

The march of the disease is, on the whole, pretty uniform and regular. In cases of average severity, the patients get gradually sicker, from day to day, for two or three weeks; or, after the first week, their condition may continue, with very little change, until

[1] Dr. Jackson's Report on Typhoid Fever, pp. 108, 109, 110, 111.
[2] Hale on the Typhoid Fever of New England, p. 241.
[3] Chomel's Leçons de Clinique Médicale, p. 44.
[4] Smith's Med. and Surg. Memoirs, p. 56.
[5] Louis on Typhoid Fever, vol. i. p. 134, 2d ed.
[6] Dr. Jennings's Letter to Dr. Clark.

convalescence commences. The disease is not usually marked by great and sudden alterations, either favorable or unfavorable, though these do sometimes occur. Neither is it marked by distinct stages, although Chomel divides it into three septenary periods, dating from the distinct and formal onset of the disease. This is arbitrary, but very well as a matter of convenience.[1]

Typhoid fever is occasionally, but not often, complicated with other diseases. Nathan Smith says that he has often seen it follow dysentery, and that he has known it to coexist with epidemic catarrh. Chomel gives a case in which it was complicated, at its commencement, with acute pneumonia. Erysipelas sometimes occurs in the course of the disease, and this more frequently during some seasons than others. During the winter of 1846–7, in Lexington, Kentucky, there were several cases attended with a bright erysipelatous redness of the nose; and the same redness was seen in some persons not suffering with the fever.

## ARTICLE III.

### PERITONITIS.

There is one other accident liable to occur in the progress of typhoid fever, of which it is necessary to speak more particularly; I mean acute inflammation of the peritoneum, occasioned by the discharge into its cavity of the contents of the small intestine, through a perforation. The lesion itself has already been described. It was first fully investigated, its nature and causes pointed out, and its diagnosis established, by Louis.[2] In a majority of instances, it takes place in cases of moderate severity, or in those which have been described as *latent*, and at a late period of the disease. Its occurrence is marked by the sudden supervention of acute pain in the abdomen. This pain comes on, all at once, with no premonitory symptoms, with nothing in the condition of the patient to account for it, and the suffering which it occasions is excessive. The access of the pain is frequently accompanied by chills, the abdomen becomes rapidly and acutely tender on pressure, and, if it was not so before, hard and tym-

[1] Leçons de Clinique Médicale. Chomel, p. 6.

[2] Mémoires sur diverses Maladies, Paris, 1826, p. 156, *et seq.*

panitic. The pulse is quick and compressed. An instantaneous change takes place in the physiognomy of the patient. The countenance is expressive of intense suffering; the features are pinched and cadaverous; and the face is covered with a profuse sweat. There is a constant and urgent desire for cold drinks. Nausea and vomiting are present soon after the inflammation has commenced; the matter ejected from the stomach is of a grass green color, and it continues to be thrown up to the last moment of life. Notwithstanding the constancy and the intensity of the distress, the patient preserves the same position, lying upon his back, and dreading every movement that may add to the pain and tenderness of the abdomen. Such, in most cases, is the formidable array of symptoms which indicate the occurrence and mark the progress of this fatal complication. Occasionally they are more obscure; and this peritoneal inflammation, like the fever itself, is to a certain extent latent. It is exceedingly rare, however, that there can be any difficulty in ascertaining its existence. Death usually takes place in from one to three days after the occurrence of the perforation.

## ARTICLE IV.

### RELAPSES.

It seems to be very well settled that true relapses, as they are called, not unfrequently occur in this disease. Dr. Jackson remarks that an error in diet and regimen is often followed by a new train of symptoms, after convalescence from typhoid fever; and that they appear to be such symptoms as belong to the fever, although not always so strongly characteristic as to leave no doubt on the subject. He cites a case in which, during the relapse, there was an eruption of the rose spots. Dr. Stewart reports two cases wherein, amongst many other of the more peculiar symptoms of the disease, the relapses were also attended by a reappearance of the typhoid eruption.[1] Indeed, there are probably few physicians extensively conversant with typhoid fever, who have not, more than once, seen convalescence fatally interrupted by a sudden return or an aggravation of many of the most cha-

[1] Edin. Med. and Surg. Journ., Oct. 1840.

racteristic symptoms of the disease, the delirium, the diarrhœa, the subsultus, the tympanites, and so on; constituting, not the supervention of a new accidental affection, but a genuine relapse.

## ARTICLE V.

### SEQUELÆ.

The most serious sequel of typhoid fever is tubercular consumption. This has been particularly noticed by Dr. Gerhard, of Philadelphia. In patients of a strumous or cachectic habit, it not unfrequently follows immediately, or very soon, upon the fever, and usually runs on with great rapidity to a fatal termination.

Dr. Jackson notices a painful state of one or both legs, coming on after convalescence, attended with more or less lameness in motion, causing much anxiety, and continuing from a few days to several weeks. There were eight cases of this kind in the hospital. Entire recovery took place in all. Dr. Jackson also mentions five cases in which, at a late period of the disease, there was swelling of one leg from well marked phlebitis.[1] Nathan Smith alludes to the same occurrence.[2] I have seen this swelled leg in only one instance. Barthez and Rilliet have met with several cases of anasarca during convalescence.

[1] Dr. Jackson's Report on Typhoid Fever, p. 133.
[2] Smith's Med. and Surg. Memoirs, p. 67.

# CHAPTER VII.

## MORTALITY AND PROGNOSIS.

TYPHOID fever must be considered, on the whole, as a grave disease. I have already had occasion, in treating of its different forms and varieties, to give some instances of its rate of mortality in different seasons and places.[1] This depends so much upon the character of the disease, in any particular locality, and during any given period, that it is not an easy matter to arrive at any positive and accurate general or average result. The prognosis, as well as the diagnosis, of this disease, is a complex problem, into the solution of which, in each individual case, there enter a great number of phenomena. Instead of going any further into the question of the average and varying mortality of the disease, I will now endeavor to appreciate, as far as this can be done, the value of the several elements which go to make up our prognosis. In doing this, I shall first briefly pass in review, and, as nearly as this can be done, in the same order in which they have already been described, the several symptoms of the disease; and I will then speak of some other considerations, connected with its degree of severity, and consequent danger.

The *mode of invasion* would seem to have no small degree of influence upon the subsequent character of the disease. This has been particularly shown by the investigations of Chomel. In his wards at the Hôtel Dieu, of seventy-three cases in which the access was sudden only twenty-six were fatal; while there were twenty deaths in only thirty-nine cases in which the access was gradual.

The strictly *febrile* symptoms are not, in themselves, of much value in prognosis. A pulse more rapid than 120 or 130 in the minute constitutes an unfavorable sign; especially if associated with any other grave symptoms. Still, it frequently happens,

[1] See pages 131, 132.

that cases recover in which this rapidity of the pulse has been present for a considerable period of time. In two hundred and ninety cases, cited by Dr. Jackson in his Report, the average frequency of the pulse in those which recovered was, in round numbers, about twenty in a minute less than in those which ended fatally. It was also from fifteen to twenty in the minute more frequent in females than in males. Dr. Jackson remarks, in his Report, that he has not found chills, at an advanced or late period of the disease, to have been followed by very grave consequences, though he had previously had a different impression. Of twenty-nine cases in which these chills were noted, only two terminated fatally. Louis says that they indicate the commencement of some secondary lesion.

The noisy, hissing, and irregular respiration, to which I have applied the term *cerebral*, is a very dangerous indication; and, as is said by Chomel, when connected with other grave symptoms, renders the case almost utterly hopeless.

*Delirium*, especially if it occurs at an early period, and is of a wild and violent kind, is of very bad augury. Many patients, in whom it comes on late, and in whom it is of a mild, muttering character, recover. Of one hundred and eight cases, mentioned in Dr. Jackson's Report, this symptom was present in two cases in seven of those which terminated favorably; and in four cases in five of those which terminated unfavorably. Transient and slight delirium, occurring during the night, or immediately after waking from sleep, and easily dissipated by attracting the attention of the patient, cannot, in itself, be regarded as a very serious symptom. There is a peculiar perversion of the mind, occasionally seen, the presence of which indicates great and imminent danger. This consists in a feeling, on the part of the patient, that he is not much sick; when he says, even in the midst of the gravest symptoms, that he feels, and that he is, very well. Louis says that he has never known this state of the mind in a patient who recovered.

Somnolence and coma are unfavorable symptoms, in proportion to their degree, and to the early period of their access. If they are present at or near the beginning of the disease, and are at all strongly marked, they are very constantly followed by a fatal termination. Moderate sleepiness or stupor, from which the patient is pretty readily roused, is common in cases of moderate severity;

but prolonged and profound coma indicates a very formidable grade of the disease. Watchfulness, restlessness, and agitation are also unfavorable symptoms. Deafness and epistaxis are, neither of them, of any considerable importance as prognostic signs. They occur with nearly the same frequency, and to nearly the same extent, in grave and in mild cases. The same thing is true of dizziness, and noises in the ears.

Spasmodic contractions of the muscles, either of the face, or of the arms and hands, constituting *subsultus tendinum*, or of other parts of the body, are of grave omen. They occur very much more frequently in cases which are fatal than in those which recover. According to Dr. Jackson's Report, they were noted, at the Massachusetts General Hospital, in one case in a little less than four of those which terminated unfavorably; and in one case in ten of those which terminated favorably. If these contractions are general and strongly marked, constituting a kind of epileptiform agitation of the whole body, or of all the limbs, the case is almost invariably fatal. Such is also the case where there is permanent rigidity of one of the limbs. Louis has never seen a case of this sort recover; and he says that he knows of no one amongst his contemporaries, except Chomel, who has. Barthez and Rilliet saw five cases of rigidity of the muscles of the trunk, in children, all of which terminated fatally; and two cases of convulsions, which ended also in death. Dr. Jackson reports six cases, in which this symptom occurred, only one of which ended in recovery. Early and extreme prostration of strength is likely to be followed by a grave and dangerous form of the disease.

The expression of the countenance may sometimes be of service in our prognosis. It is hardly necessary to say that the pinched, cadaverous, Hippocratic face generally indicates speedily approaching dissolution. On the other hand, the reappearance of intelligent expression on the features, from which it had long been banished; the re-illumination of the dull and listless eye; the recognition by the patient of his friends and attendants; accompanied by the manifestation of interest in his own situation and safety, and in surrounding circumstances, are, even in the midst of many grave symptoms, cheering indications of a change that will end in recovery.

The appearance of the tongue is of less importance as a prognostic sign than has generally been supposed. It is worth some-

thing, but in itself not a great deal. In Dr. Jackson's cases, the rate of mortality, with a dry tongue, was 1 in 47.1; with a denuded tongue, 1 in 8; with a dark tongue, 1 in 8.28.[1] A very dry, cracked, red or blackish tongue is more unfavorable, certainly, than one that is moist, with a thin, brownish, or yellowish coat; but the former appearances are not unfrequently present in cases which recover, and, unless accompanied with other grave symptoms, are not much to be regarded.

Difficulty of swallowing, especially if great, is an unfavorable sign.

Meteorism, or tympanitic distension of the abdomen, constitutes an unfavorable symptom only when it is strongly marked.[2]

Diarrhœa, if urgent and continued, is a grave symptom. It is much more constantly present in severe and fatal cases than in mild ones, although patients often recover who have suffered greatly and for a long time with it. Nathan Smith says: "The danger of the disease is in proportion to the violence of the diarrhœa; when the patient has not more than four or five liquid stools in the twenty-four hours, it is not alarming, as it does not seem to weaken him much; but if they exceed that number, serious consequences may be apprehended. I have never lost a patient whose bowels continued constipated through the whole course of the disease, and have never known a fatal case of typhus, unattended by diarrhœa."

Involuntary discharges from the bowels rarely take place, except in the late stage of very severe cases. Of course, they point towards an unfavorable termination, although they are far from indicating with any certainty such a result. Of thirty cases in which this symptom was present, mentioned by Chomel, thirteen ended in death. Of ten cases, cited by Dr. Jackson, only four recovered.

Hemorrhage from the bowels is a grave symptom, though far from an invariably fatal one. Of seven cases, cited by Chomel, all but one terminated unfavorably. The experience of others, however, is less discouraging. Of seven cases, mentioned by Louis, three were fatal; and of thirty-one cases, occurring in the Massachusetts General Hospital, eleven only terminated unfavorably. I have certainly seen as many instances of recovery, as of

[1] Report, &c., p. 115. [2] Louis on Typhoid Fever, vol. ii. p. 341, 2d ed.

death, in patients who have suffered from this accident. I do not know that the quality of the intestinal discharges, in any other respect, has any constant relation to the danger of the disease.

Retention of urine is an unfavorable symptom. Of six cases in which it was present at the Massachusetts General Hospital, three were fatal.

Erysipelas occurs oftenest in the course of severe and alarming cases. It not only indicates a grave form of the disease, but it adds also to its danger. The rose spots occur with like frequency in all grades of the disease, and are destitute, of course, of any prognostic value. The same remarks may be made of eschars upon the sacrum, as have just been made in regard to erysipelas.

Before leaving this consideration of the several symptoms of typhoid fever, in their relation to prognosis, it is important to notice one other circumstance, of occasional occurrence, bearing upon this subject. It sometimes happens that a very well marked amelioration of all the symptoms takes place somewhere, usually, between the tenth and twentieth days of the disease; constituting, indeed, an apparent convalescence; and that this amendment is soon after followed by the return, in an aggravated form, of the symptoms which had subsided or diminished, in severity. This species of relapse is almost invariably followed by death. This circumstance is particularly noticed by Chomel, and the truth of his remarks is corroborated by Louis.

Besides the foregoing, there are some other circumstances which affect in a general way the question of prognosis in typhoid fever. The principal of these are *age*, *season*, and *acclimation*.

Speaking now of adult patients, that is of those over fifteen years old, it seems very certain that the danger to be apprehended from this disease is somewhat in proportion to their increased age. The mortality is smaller between the ages of fifteen and twenty than it is between the ages of twenty and twenty-five; or than it is at any subsequent period of like duration. The mortality at the Hôtel Dieu, in Chomel's wards, was one in five, between the ages of fifteen and twenty; one in four, between the ages of twenty and twenty-five; and one in two, over the age of thirty-five. Louis and Chomel agree in saying that they have rarely found cases to terminate fatally, where the patients were between the ages of fifteen and seventeen years. At the Massachusetts General Hospital, Dr. Jackson found the average age in

the fatal cases to be a little more than two years greater than in the cases not fatal. He found also, upon a further analysis, that in those patients whose ages were thirty-five years or more, the mortality was one in four; while in those whose ages were twenty years or less, it was only one in nearly eleven. The prognosis is said to be more favorable amongst children than amongst adults; but of Barthez and Rilliet's one hundred and eleven cases, twenty-nine terminated fatally.

It would appear, from the observations of Chomel, that typhoid fever is more grave and fatal in the cold, than it is in the warm season. At the Hôtel Dieu, in 1832, the mortality was one in three during the winter, and one in six during the summer; in 1834, it was one in two and a half during the winter, and one in seven during the summer; and in 1835, the average proportions were the same as in 1832. An exception to this general result occurred in 1831, when the proportion of deaths was one in four during the winter, and one in three during the summer. The number of cases, however, in the hospital, this year, was small. Chomel appears to have no doubt as to the influence of season upon the severity and mortality of the disease.[1] I do not know how far his conclusions are sustained by the observations of others. The most fatal form of the disease that has ever been witnessed in the city of Lowell prevailed during a winter of extreme severity. In the Massachusetts General Hospital, from 1822 to 1835, the rate of mortality during the cold months was 1 in 6.39; while in the warm months it was only 1 in 8.21.[2]

Of one hundred and eighty-three cases given by Forget, forty-three terminated fatally. The rate of mortality varied with the seasons in the following manner: in the autumn, it was one in $4\frac{3}{13}$; in the winter, one in $3\frac{3}{11}$; in the spring, one in $3\frac{5}{11}$; and in the summer, one in $6\frac{1}{3}$.[3]

It seems, also, and this principally from the results obtained by Chomel, at the Hôtel Dieu, that the length of time during which patients have resided wherever they suffer from the disease, has some influence upon its mortality. Between the 1st of November, 1834, and the 1st of August, 1835, there were ninety cases of typhoid fever in Chomel's wards at the Hôtel

[1] La Lancette Française. August, 1835.
[2] Dr. Jackson's Report, p. 107.
[3] Traité de l'Enterite Folliculeuse. Par C. P. Forget, p. 409.

Dieu. Amongst those patients who had resided in Paris less than one year, the mortality was one in three; amongst those who had resided in Paris between one and two years, the mortality was one in five; and of fifteen, who had resided in Paris more than two years, only one died. There is reason to think that this result is not accidental, since the same differences, though to a less striking extent, were noticed during the three previous years, and since they are also in keeping with the observations of Louis.[1] Chomel has suggested that a certain degree of general debility, either constitutional or the result of previous disease, may act favorably upon the severity and the termination of typhoid fever. Forget says he has often been struck with the rapidity with which the disease has run on to a fatal termination in cases of young persons with rich, vigorous, and fine constitutions, so that it was not without a secret terror that he saw these patients enter the hospital.[2]

Whether typhoid fever is any way influenced in its severity by *race*, I am unable to say. During the year 1846, Dr. Sutton, of Georgetown, Ky., saw forty-three cases of the disease. Thirty of these were amongst whites, and eight of them were fatal—1 in 4; thirteen were amongst negroes, two of which were fatal —1 in 6½. These numbers are of course too small to be in themselves of much value.

There is no evidence that the supposed occasional exciting causes of typhoid fever, such as scanty and poor diet, depressing emotions, fatigue, and excesses, have any effect upon the severity and fatality of the disease.

It must be obvious enough, from all the foregoing considerations, that the prognosis, in any given individual case of typhoid fever, can very rarely, if ever, be absolute and positive. Patients sometimes recover from the most desperate condition; they are liable to the most dangerous and fatal accidents, in the mildest cases. But, notwithstanding these contingencies, we may, in a great majority of instances, by a careful study of all the circumstances which can influence the result, arrive at a good degree of approximative certainty in our prognosis. In a moderate proportion of cases, the scales of life and death may hang for many

[1] La Lancette Française. August, 1835.

[2] Traité de l'Enterite Folliculeuse, p. 404.

days, so far as we are able to see, in almost exact equilibrium; and no foresight or sagacity can predict, with any degree of confidence, which of the two will finally preponderate. Favorable and unfavorable symptoms will be so combined, and so attempered, as to baffle all the efforts of wisdom and experience to calculate their issues. Hope and Fear are constant and equal watchers by the bedside of the sick. In all the rest, however, the general character of the symptoms will be, one way or the other, so marked and so decided, as to enable us to judge with a reasonable degree of certainty as to the result. If during the first fortnight, the pulse is not more than one hundred or one hundred and ten in the minute; if there is only moderate drowsiness; if there is no delirium, or even if this, though present, has not appeared at an early period of the disease, and is easily dissipated, or mild in its character; if there is no twitching of the tendons; if the patient gets some comfortable sleep; if the diarrhœa and tympanitic state of the abdomen are moderate in degree; the chances of recovery are vastly in favor of the patient. Bearing in mind the liability which always exists to a sudden aggravation of the symptoms, to the supervention of some secondary complication, and to the occurrence of intestinal perforation, and the qualification necessarily accompanying this liability, we may in such cases, with great confidence, anticipate a favorable result. On the other hand, if the pulse is more than one hundred and ten or one hundred and twenty in the minute; if there is great stupor or coma; if the delirium comes on early, and is wild and furious; if there are spasmodic contractions of the muscles, picking at the bedclothes, and great prostration of strength; if there is restlessness or agitation; if the diarrhœa is urgent and continued; if the distension of the abdomen is extreme; if the odor from the patient is musty and cadaverous; if the features are pinched and Hippocratic; especially if there are general epileptiform convulsions or permanent rigidity of one of the limbs; or that peculiar perversion of the intellect which leads the patient, in the midst of this terrible combination of threatening circumstances, to suppose and to declare himself free from suffering and danger; if these symptoms or any considerable number of them, are present, we can have very little ground to look for any but a fatal termination; and this termination we may with great confidence predict.

# CHAPTER VIII.

## DIAGNOSIS.

It is only since the publication of the work of Louis, by the aid of his and of subsequent researches, that typhoid fever has been distinguished, with any considerable degree of constancy and certainty, from other more or less analogous forms of disease. And even now, there are few problems in diagnosis more complex than this; although, by the application of the requisite knowledge and care, its solution is almost always attainable. The elements which enter into the composition of this problem are many and various. There is no one symptom, there are no two or three symptoms, which, in themselves, are characteristic of the disease. There is no one symptom, there are no two or three symptoms, usually occurring in the disease, which may not be absent during its entire progress. Our diagnosis can never be founded here, as it is in many other instances, on a few positive physical signs. It must always be *rational*, not *absolute*. The evidence upon which our verdict is to be rendered is wholly circumstantial. Notwithstanding all this, and although cases sometimes occur, so enveloped in obscurity as to baffle the skill of the most careful and experienced observers; it is still true that there are few general diseases, the diagnosis of which is so well established, and so certain, as that of typhoid fever.[1]

Perhaps, in the present state of science, a single qualification ought to be affixed to this last remark. The whole question of the diagnosis of the several individual diseases constituting the family of *idiopathic* or *essential fevers*, has been undergoing,

[1] A British reviewer of my book gravely cites this admission, of the occasional difficulty, or impossibility, of making an absolute and positive diagnosis, as sufficient proof that there is no specific difference between the *typhus* and the *typhoid* forms of continued fever—as though there could be no such individual diseases as cancer of the stomach, or softening of the brain, because we are not always able to make them out with entire certainty during life!

ever since the publication of the work of Louis, a more rigorous and philosophical scrutiny than it had been subjected to before. Much of the chaotic confusion in which this question had always been involved has been cleared up. Diseases, which had occupied distinct and perhaps widely separated places in the nosologies, have been shown to be identical; and diseases, on the other hand, have been shown to be widely different in their character, which had been regarded as identical. Some of these questions of difference and identity are still unsettled; they are matters not yet finally and definitively disposed of; not yet ranked amongst the established principles of medical science. One of the most important and interesting of these, and this constitutes the qualification which I wished to make, is that of the differences between the disease now under consideration and the *true typhus fever*. By many pathologists, the two diseases are considered to be essentially alike, identical. Until within a few years, this was the general opinion, and even now it is almost universally entertained by the British physicians, who have enjoyed the most extensive opportunities for studying and comparing the two diseases, or the two *forms of disease*, as the case may be. By other pathologists, these diseases are considered to be essentially and fundamentally unlike each other; unlike in their nature, in their symptoms, in their pathology, and in the mode of management which they require. I believe this last opinion to be the true one; but it cannot be satisfactorily discussed until both diseases have been described. For this reason I shall omit, in what I have now to say upon the diagnosis of typhoid fever, the consideration of the differences between it and the true British typhus.

Setting aside then, as I do for the present, the true typhus fever, there is no disease more readily and positively recognized than a case of well-marked typhoid fever, of extreme or even of average severity, when observed from its commencement and followed through its entire course. It is hardly possible to confound it with any other affection. There is no other in any considerable degree resembling it. Chills, more or less severe, repeated or not; accompanied with or immediately followed by headache, and pains in the back and limbs; these pains subsiding and disappearing in the course of a few days; thirst; heat of the skin; acceleration of the pulse, with an evening exacerbation;

entire loss of appetite; great muscular debility; dulness and confusion of the intellect, passing gradually into delirium; restlessness; vigilance, or somnolence; twitching of the tendons, or picking at imaginary objects; occasional epistaxis; ringing or buzzing in the ears; the appearance of a scattered, rose-colored eruption, principally upon the skin of the chest or abdomen, during the second week; a dry, glutinous, cracked, red, brown, or blackish tongue, protruded with difficulty, and trembling; dark thick sordes upon the teeth; diarrhœa; the stools thin, watery, and dark or yellowish, sometimes consisting of blood; tympanitic distension of the abdomen; dulness on percussion over the spleen, and gurgling upon pressure upon the right iliac region; with a dry sibilant or sonorous rhonchus over the chest: these symptoms, coming on without any obvious cause, occurring usually in a person under forty years of age, and referable to no local disease; more or less regularly and successively developed; increasing in severity, and terminating in death, at an indefinite period after the eighth day; or gradually subsiding and disappearing one after another, and giving way to convalescence at an indefinite period after the fifteenth or twentieth day, mark most clearly and unequivocally a disease *wholly unlike any other*. These symptoms are sometimes during the progress of the disease, and in various degrees of relative severity, all of them present; and in these cases, at any rate, *there is no possibility of mistaking typhoid fever for any other disease*. The diagnosis, independent of the evidence to be derived from the lesions found after death, in the fatal cases, is easily and certainly made.

In other instances, many of the foregoing, and amongst them some of the most characteristic symptoms, may be wanting; and still the diagnosis may remain in no way difficult or doubtful. Some of the most serious disturbances of the nervous system may be absent. There may be no morbid watchfulness or drowsiness; no aberration of the mind; no twitching of the tendons; but if the other symptoms above enumerated are present, *there can be no uncertainty as to the character of the disease*. Again, it may happen that the abdominal symptoms—the diarrhœa, and tympanitic distension may be wanting, without throwing any doubt upon the diagnosis. We may go further than this. Let us suppose that a person between the ages of fifteen and thirty

is attacked, without any appreciable cause, by the febrile symptoms already repeatedly described; attended or followed by loss of appetite; sufficient prostration of muscular strength to confine the patient to his bed; occasional epistaxis; slight dizziness or ringing in the ears, at least on assuming the upright position; and that these symptoms cannot be referred to any local disturbance, and persist for as many as twelve or fifteen days, with but little change, and not much influenced by medicine; *even under these circumstances there can be but little question as to the disease.* In most cases, there will be found at least as many elements of diagnosis as in that just supposed; in very many, there will be more. Almost always, the lenticular eruption will be discovered, if it is timely and carefully sought for; if there is no diarrhœa, there may be slight distension of the abdomen, with gurgling on pressure over the region of the cœcum; or there may be deafness or sluggishness of the mind, or transient and wandering delirium, or, finally, some one or two of the numerous symptoms more or less characteristic of the disease.

I do not mean to say by this that typhoid fever can always be distinguished with certainty from other diseases, even when it is watched during its whole course, and by the best observers. Unquestionably the disease is sometimes so nearly latent, or so poorly defined, as to be overlooked or mistaken; but with ordinary knowledge of its character, its symptoms, and their march, and with careful examination, *this will very rarely be the case.*

It may happen not unfrequently, that the disease cannot be positively made out during the first few days after its access. The febrile symptoms, the chills, heat, thirst, accelerated circulation, with the pain in the head and limbs, are amongst the most prominent at this period, and they are those least characteristic of this disease. They are, indeed, common to the early period of this and of many other febrile affections, and of the local phlegmasiæ; so that, until the subsequent and more distinctive and peculiar symptoms of the disease, whatever this may be, show themselves, it may not be possible to establish our diagnosis. In the same way, it may happen that the disease is not seen till it has reached its late stage. Many of its most important diagnostic characters may have disappeared, and no satisfactory history of its anterior progress can be obtained. Under such circumstances, it may sometimes be confounded with other affections;

with dysentery in its late stages; with some diseases of the brain; and with local inflammations which are strongly marked, especially near to their fatal termination, with what may be called the *typhoid element* in pathology. Louis once mistook a case of central softening of the brain, occurring in a boy, for typhoid fever. Erysipelas is often attended with many of the symptoms of this disease; delirium, drowsiness, or stupor; red or brown and dry tongue, fuliginous teeth and gums, tympanites, and great prostration of strength, so that, were it not for the presence from the commencement of the cutaneous inflammation, it might sometimes be confounded with typhoid fever.

The diagnosis of typhoid fever in children is sometimes attended with considerable difficulty. The diseases with which it is most likely to be confounded, are gastro-intestinal irritation, accompanied by fever, and meningitis. The following points of difference between it and these diseases are enumerated by Barthez and Rilliet. Typhoid fever may be distinguished from gastritis, by the presence in the former of a greater degree of debility than usually attends the latter; by a moderate agitation or delirium during the night; by diarrhœa and gurgling on pressure over the ileo-cœcal region; by dulness on percussion over the region of the spleen; by the rose spots and sudamina, at least in a large majority of cases; by more intense and prolonged febrile excitement; and by the physical signs of bronchitis. From intestinal or gastro-intestinal irritation, it may be distinguished by the same signs, excepting the diarrhœa.

The disease in children with which typhoid fever is more likely to be confounded than with any other, is meningitis. A careful attention to all the phenomena of the two diseases will, however, generally enable us to distinguish between them. In many cases the pulse is more rapid at the commencement of the disease in typhoid fever than it is in meningitis, although this difference is not sufficiently constant to be much relied upon. Spontaneous nausea and vomiting are more common in the latter than in the former; and the headache is generally more severe. There is a very constant and striking difference in the state of the bowels; in typhoid fever, there is diarrhœa; in meningitis, there is constipation. The tongue is more frequently dry, brown, and cracked, and the lips and gums covered with sordes in the former than in the latter. The early stage of meningitis is more frequently at-

tended by extreme agitation and delirium than that of typhoid fever; and finally, the latter is more frequently accompanied by slight cough, and a dry sibilant rhonchus than the former. I may add that, while general convulsions are common during the middle and latter stages of meningitis, they seem to be very rare in typhoid fever, since Barthez and Rilliet met with them only twice in one hundred and eleven cases.

Typhoid fever, like all other continued affections, is sometimes more or less mixed up with and influenced by the pathological element of periodicity. This will happen most frequently and will be most strongly marked in malarious regions, and during the prevalence of remittent and intermittent fever. Dr. Wooten of Lowndesboro', Alabama, in a letter to me, says: "I may remark that I have often seen typhoid fever complicated with regular remittence—that is, typhoid fever and remittent fever existing together; and I have cured the paroxysmal exacerbations, whilst the disease essential to typhoid fever continued; and I have frequently found it necessary to do this, before the more formidable disease could be influenced by remedies. I have seen such cases in the practice of physicians, who supposed them to be remittent or bilious fevers, in which the bowels had become diseased as a consequence of the fever. I think this is a very common error. The malarial influence frequently so preponderates in the symptoms of inflammatory diseases in our latitude, as to obscure the real disease for many days; and in such cases it is easy to look upon such influence as the cause of the structural lesion, whilst, in fact, the latter has acted as the exciting cause to the manifestations of the former." Dr. J. G. Core, of Williamson county, Tennessee, also in a letter to me, speaks of this same blending, occasionally, of the remittent element with typhoid fever. "Remittent fever," he says further, "will certainly run into a typhoid type, unless it is checked early before it becomes complicated; but that is far from being a case of true typhoid fever."

I have said nothing, thus far, of the lesion of the elliptical plates, as an element in the diagnosis of the fatal cases. It has already been remarked that this lesion is characteristic of this disease, that it is invariably found in the fatal cases of typhoid fever, and that it is not found in fatal cases of any other acute disease. If this is absolutely true, without exception and without qualification, then the presence or the absence of the lesion ought

to be final and decisive in regard to the diagnosis. Let us see what the evidence is upon this matter. I have already spoken of one case, which was regarded by Louis as typhoid fever during life. A post-mortem examination showed that the elliptical plates and mesenteric glands were healthy, and that death was the result of softening of the central portions of the brain. This, then, was manifestly not a case of typhoid fever. Not only were the usual lesions of this disease wholly wanting, but all the symptoms and the fatal result were sufficiently accounted for by the cerebral lesion. This was a case of disease of the brain simulating, to a certain extent, typhoid fever. And even here, it is but justice to say that Louis now considers his diagnosis to have been precipitate; the diagnosis of a similar case occurring at the present time would, to say the least of it, be qualified and doubtful. Another case is recorded by Louis, in the first edition of his work, which was marked by most of the symptoms of typhoid fever, and, on examination after death, no lesion was found in the elliptical plates or the mesenteric glands. But here, again, it is important to remark that the case occurred in 1823, when the diagnosis of typhoid fever was more doubtful than it is at the present time; and, furthermore, that the patient was not seen by Louis till the twentieth day of his illness. If to these circumstances it be added that there was extensive ancient disease of one of the kidneys, fatty liver, and considerable effusion under the arachnoid membrane, and into the lateral ventricles, certainly we are justified in concluding, not that the case was one of typhoid fever, but that the diagnosis was incorrect. The second edition of Louis's work was published in 1841. In that, it is said that no single new case constituting even an apparent exception to the uniform relationship between the group of symptoms upon which the diagnosis of typhoid fever rests and the abdominal lesion had then been met with, either by Louis himself, Chomel, or Bouillaud. One case is briefly reported by Fouquier, which occurred at La Charité, in 1833, in which the symptomatology of typhoid fever seems to have been pretty clearly marked, and in which the elliptical plates and the mesenteric glands were found almost free from disease.[1] A strong case of apparent exception to the law of relationship now under consideration is reported by Prosper Dor.

[1] Journal des Connaissances Médicales, Jan. 1834.

It occurred at the Hôtel Dieu of Marseilles, in 1833. The patient was eighteen years old, and died on the eighth day of the disease. There were these symptoms: headache; debility; loss of appetite; sleeplessness; then, epistaxis; great prostration of strength; soft, irregular pulse; dry, blackish tongue; sordes on the teeth; meteorism; diarrhœa; delirium; *subsultus tendinum*, and picking at the bedclothes. There was no cutaneous eruption. Certainly, in this case the diagnosis, during life, would have been sufficiently clear and positive. An examination after death showed the intestines to be healthy, but it showed also extensive disease of the urinary apparatus. The mucous membrane of the bladder was incrusted with a layer of urate of lime, and in the left kidney there was a considerable number of purulent depositions. Now, when it is considered that diseases of these organs are very frequently attended, near to their fatal termination, with strongly marked *typhoid phenomena*, there can be no hesitation, I think, as to the disposition which ought to be made of the foregoing case; no difficulty in assigning to it its proper position. It was clearly not typhoid fever; but an instance of disease of the urinary apparatus, in which the typhoid symptoms, which often accompany the latter stages of the affections of this apparatus, were more numerous and more closely resembling those of typhoid fever than is often the case. Grisolle says that he has seen only a single exception to the relation of which I am speaking.

I have been permitted, through the kindness of Dr. Hale and Dr. J. B. S. Jackson, of Boston, to look over the notes of a case which occurred in 1841 in the Massachusetts General Hospital, and which might seem to constitute an exception to this relationship. The patient was twenty-two years old. He entered the hospital on the 23d of June, 1841, after an illness of two weeks; during the first half of which time he kept about his work. He had pain in the head, back, and limbs; dizziness; *tinnitus aurium;* prostration of strength; loss of appetite; daily spontaneous diarrhœa; abdominal pain and epigastric distress; tenderness over the right iliac region; rigidity of the muscles and tympanitic distension of the abdomen; epistaxis; the rose-colored spots, and sudamina. He died on the eighth of August, having exhibited for some time symptoms of severe gastritis. The mucous membrane of the stomach was mammellonated, red, thickened, and ecchymosed; there was ulceration of the mucous

membrane about the fauces and root of the tongue; and the only alteration of the elliptical plates of the ilium consisted in their great distinctness, and perhaps a slight thickening, with a bright, spotted, ecchymotic redness of two of the plates; one of them two feet and the other four feet from the ileo-cœcal valve. One or two others were similarly affected, but in a slighter degree. A portion of the ileum nearly a foot in length, extending to within six inches of its lower termination, was deeply ecchymosed in bands running round the intestine. A single mesenteric gland, directly opposite to the ileo-cœcal valve, was nearly as large as the end of the thumb, red and soft. The other glands were scarcely at all enlarged. The spleen was of medium size.

This case seems to me to be one of great interest, and susceptible of an obvious and ready explanation. The patient died of gastritis, eight weeks after the accession of typhoid fever. There is no evidence that the primary affection here was of unusual gravity; there is no good reason to think that positive ulceration of the intestinal follicles usually takes place in mild cases, and perhaps not in many of moderate severity; and in the one before us, supposing such to have been the case, sufficient time had elapsed from the commencement of the disease to account for the moderate degree of alteration in the elliptical plates and the mesenteric glands. *It was a case of typhoid fever, I think, of moderate severity; the patient dying of gastritis, at so late a period that the entero-mesenteric lesion had in good part, but not entirely disappeared.*

In the discussion of this question, great stress has been laid upon the observations of Andral, by those who deny or doubt the constancy of the connection between the diagnostic symptoms of typhoid fever and the peculiar lesion of the elliptical plates.[1] A very cursory examination, however, of the facts cited by this distinguished writer, will show conclusively *that they justify no such inferences as have been deduced from them.* The cases which he has reported are fifteen in number. He arranges these in two classes: the first, consisting of cases of what he calls continued fever with gastro-intestinal lesions, but without any alteration of the elliptical plates; the second, consisting of cases of what he calls continued fever, without any appreciable lesion of

[1] Andral's Clinique Médicale, vol. iii., pp. 222 to 274, 2d ed., Paris, 1830.

the digestive tube. In the first class are contained the histories, generally short and incomplete, of seven patients. The fifth, sixth, and seventh are the only ones amongst them that can be considered even doubtful. The others are clearly enough *not typhoid fevers;* in most of them there was not present even the *typhoid state.* The sixth case looks like the true petechial typhus, although the history of the patient is too imperfect to justify any confident diagnosis. The seventh case appears to have been one of pneumonia, complicated with erysipelas, following upon simple enteritis, and marked by typhoid phenomena. Certainly, there is not one amongst them which, with our present means of diagnosis, would be regarded with any degree of certainty, before death, as a case of typhoid fever.

An examination of the eight cases included in the second class is still more conclusive in its bearing upon the question now before us. There is not one amongst them, the diagnosis of which, so far as typhoid fever is concerned, can be looked upon as even doubtful. It is hardly too much to say that neither of them could now be taken, by any possibility, for a case of typhoid fever. I will briefly enumerate the diseases. The first case, forty-sixth of the volume, was phlegmonous erysipelas of the arm, occurring in a soldier thirty-five years of age; the second was gangrene of the right leg in a patient fifty-three years old, suffering with organic disease of the heart; the third was inflammation, either chronic or acute, of the right kidney and the mucous membrane of the bladder in a patient sixty years of age; the fourth was extensive suppuration of the prostate gland; the fifth was latent pneumonia in a woman eighty-one years of age; the sixth and seventh were affections of the brain, one of them in a patient eighty-one years old; and the eighth was gangrene of the lip, accompanied with extensive phlebitis, and numerous purulent depositions in the lungs. This simple statement of these cases precludes the necessity of any further remarks upon them. Manifestly, they have no connection with the question of relationship between the usual symptoms of typhoid fever and the alteration of the elliptical plates of the ileum; and yet they have been, more perhaps than any others on record, relied upon to prove the want of any constancy in this relationship. It is certainly very important that this *typhoidal state* of the system, occurring in connection with many diseases, should be distinguished from

*typhoid fever. Unless this is done, there is an end to all positive and philosophical diagnosis.* Since writing this history, I have seen a patient presenting these phenomena amongst others: prostration of strength; slight *subsultus tendinum;* tympanitic distension of the abdomen; diarrhœa; gurgling on pressure; a dry, red, cracked tongue; sordes on the teeth; wandering delirium; and sudamina about the neck. Here were many of the most characteristic elements of typhoid fever; but the disease was clearly and unequivocally puerperal peritonitis. These *typhoid phenomena*, as I have already said, are often present in many diseases: in smallpox; in scarlatina; in asthenic pneumonia; in softening of the brain; in some diseases of the kidneys; in erysipelas; in dysentery, and so on; but under these circumstances, *where their connection with these several affections can be discovered, they ought not to be confounded with typhoid fever.* It was from disregarding this obvious principle that Andral was led to the conclusion which I have been examining.

Barthez and Rilliet, in the course of some observations on the disease as it occurs in children, published in the *Journal des Connaissances Médico-Chirurgicales* for 1841, report one or two apparent cases not attended by the characteristic lesion.

There is one other point in the discussion of this question which it is important not to overlook. It has been said that these intestinal lesions, strongly marked and striking as they may be, are by no means confined to cases of typhoid fever—*that they are frequently found in other and quite dissimilar diseases;* so that, admitting even that they constitute the constant anatomical lesion of typhoid fever, they are still not distinctive and characteristic, since they are common to it and to other diseases.

There is a single reply to these objections, which seems to me entirely satisfactory and conclusive. The diseases, other than typhoid fever, in which alterations of the intestinal glands are most frequently found, are tubercular phthisis, scarlet fever, and certain forms of cholera. Now in all these cases, it is quite sufficient to say that the condition of the glands is obviously and manifestly different from what it is in typhoid fever. In phthisis, the intestinal ulceration is clearly tubercular, depending upon the presence and development of this morbid product in the intestinal glands. Besides this fundamental difference in the very nature of the lesion, the inflammation and ulceration in phthisis are chro-

nic in their march, and the appearance of the lesions differs in many other respects in the two diseases. As to scarlet fever, and some of the forms of cholera, it is enough to say that the only changes of the intestinal glands observed in these diseases have consisted in a moderate thickening, with or without redness and softening of the follicles, and that even these changes are far from constant. In none of these diseases are there the peculiar changes of the intestinal glands found in typhoid fever, while the mesenteric glands are very rarely at all affected.

In the consideration of this question, as of all others which are still legitimate subjects of discussion and controversy, I have sedulously endeavored to avoid anything like a partisan or one-sided examination. I have not intentionally overlooked or put aside, or warped to my mere wishes, if I have any such unfriendly and treacherous guides and counsellors in the search for truth, any of the evidence bearing upon the subject. I have adduced all the cases that I have been able to find which might seem to constitute exceptions to this general relationship, or to throw doubts upon its invariableness; and the conclusion to which I am irresistibly led is this: *That the connection between the diagnostic symptomatology of typhoid fever and the entero-mesenteric lesions is, I will not say absolute and invariable, but as nearly so as the connection between the diagnostic symptoms and the characteristic lesions of any given disease whatever in the nosology, in which this connection is not established by positive physical signs.*

# CHAPTER IX.

## THEORY.

I believe that it will be a phenomenon in medical writings to find an essay on such a disease as fever unattended by a theory of its proximate cause. Yet were it as well if the professor who spends months in exciting the wonder or applause of a juvenile audience with phraseology which he does not himself understand, would substitute, for all this waste of words and time, the confession of his own and the general ignorance.—JOHN MACCULLOCH.

THE most positive thing that can be said under this title is, that the materials for a complete and philosophical *theory of fever*, or *theory* of any individual fever, using this phrase in its ordinary acceptation, do not exist. Such a theory presupposes and involves a knowledge of the intimate processes and relations of the living powers which has not yet been attained. It is very questionable even whether such knowledge is attainable.

In order to see clearly the truth of these observations, and the extent of this truth, let us inquire for a moment what *some* of the elements are which must go to make up this knowledge; what their nature is, and in what they consist. In the first place, we must know what the actual efficient *causes* of any given fever, or form of fever, are. We must know what that agency or combination of agencies is, which, being present, brings into existence, originates, sets in motion that concatenation of disordered actions, that complex combination of morbid processes, which constitutes the fever. We must know in what manner these agencies act; where they make their impression; and in what the modifications consist which they work in the living organization and its properties. Of all these things, we are utterly and profoundly ignorant. In the second place, we must know the seat and character of all these processes and modifications themselves; their peculiarities; their tendencies; the differences which exist between them in the several forms of febrile disease. We must know their relations to each other.

We must know which amongst them are primary and essential; which are secondary and accidental. We must know the parts which they severally play in the production of the integral disease. Of these things, also, as of the causes of fever and their mode of action, it is not too much to say that, if we are not wholly and profoundly ignorant, we are so to a great extent. They are but very partially and imperfectly known to us. They are known to us rather analogically, if I may so speak, and by comparison with other morbid processes, than absolutely and positively. We can see wherein they differ in many respects from these other processes, and wherein they resemble them. With these limitations, and under the conditions implied by these remarks, there is no reason why we may not attempt to commence the foundation of a *theory of fever*. But in the present state of science, it can only be an attempt at a commencement. We may endeavor to interpret the connection and relationship which observation has shown to exist between certain phenomena or groups of phenomena. We can do nothing more.

It ought to be unnecessary to say that even this can be done only by confining ourselves to a single well-defined individual form of fever. Under the simplest conditions, and where alone it is in the nature of things at all possible, we shall find this interpretation or theory sufficiently obscure and difficult. When attempted as has generally been the case under other conditions, it has proved utterly futile; when applied, as these interpretations and theories have generally been applied, to unascertained and imaginary states of the system, they have always degenerated, necessarily, into the idlest of all conceivable speculations. There is no such individual disease as that which has always been expressed, and which is still expressed by the term *fever*. How then can there be any *theory* of fever? There are many separate diseases, to which this generic name is properly enough applied, on account of certain general analogies which exist between them. *But the disordered actions and processes which constitute one of these diseases may differ essentially; and, as far as we can ascertain, in most cases they do so differ from those which constitute another of these diseases. The theory of one fever, then, must be wholly or to a great extent inapplicable to another.* The elements which enter into the composition of one problem are not to be found in the other, or they are present in different proportions.

*The word fever, when used as it commonly is to designate a disease, has no intelligible signification.* It is wholly a creature of the fancy; the offspring of a false generalization and of a spurious philosophy. What, then, can its *theory* be but the shadow of a shade?

If the true theory of disease be such as I have represented it, we should naturally look in its application to any individual and separate form of disease, first and principally to those phenomena which are most constantly present, and which seem to constitute its most important elements. According to this rule, and in relation to the subject immediately before us, the theory of typhoid fever, the first inquiry would naturally be, what is the nature and what are the relations of its characteristic lesion—that of the elliptical plates of the ileum? A satisfactory answer to these questions would so far settle the theory of the disease.

What is the nature of this alteration of Peyer's glands? Does it consist in an inflammatory action, and its results? If so, is the inflammation common and simple; or has it something peculiar and specific in its character? We can hardly hesitate, I think, in attributing this lesion to inflammation. We know nothing of any other morbid process that can produce similar results. In its early stages, we find the tissues which are its seat tumefied and reddened; subsequently, ulceration takes place; and if life is not destroyed, there is abundant evidence that the restorative process is set up and the lesion removed by complete cicatrization. Their enlargement, softening, redness, and in some instances the presence of pus in their substance, are equally sufficient proofs that the affection of the mesenteric glands is also of an inflammatory character. But as to the second point, it seems to me that all the analogies in pathology tend to show that this inflammation is not *common*, but *specific*. It is circumscribed, and not diffused, as ordinary inflammation of the mucous tissues usually is. It does not often lose itself gradually, shading off into healthy membrane. The morbid process almost constantly extends to the subjacent cellular membrane, which is almost never the case in common mucous inflammation of an acute character. Its tendency to rapid ulceration, and the appearances of some of its morbid products, would also seem to show that it has something special and peculiar in its nature. Is it not also philosophical and fair to infer something in corroboration of these views

life is not destroyed, in a return to health; and, finally, this process is but little under the control of art. It is strongly corroborative of the soundness of this view that, in a disease closely resembling this in many of its symptoms, I mean the contagious typhus, there is no constant local lesion of any sort to which the symptoms can be referred. Certainly, it needs no elaborate argument to show how clearly all these circumstances indicate that the local lesions in this class of diseases are *peculiar in their nature, secondary and dependent in their relations, constituting not the primary and essential cause, but only one of the pathological constituents of the particular diseases in which they severally occur.*

Some pathologists have adopted the doctrine that the unknown cause of typhoid fever acts primarily upon the nervous system, producing some unascertained lesion of innervation, which, in its turn, gives rise to disturbances and alterations in the other organs, apparatuses and tissues, and in the fluids; these aggregate disturbances and alterations constituting the disease. This doctrine may be the true one; but in the present state of science it must be regarded as wholly hypothetical; and there are some considerations which militate strongly against its probability.

Another theory is that which places the primary and fundamental alteration in the blood. We may be justified, I think, in believing that at least this theory has more claims upon our attention, and is more probable, than that of which I have just spoken. It is fully demonstrated that, in many cases of typhoid fever, and of diseases to which it is more or less nearly allied, there is the common presence in them all of what has been called the *typhoid state*, or the *typhoid element* in pathology, implying that peculiar changes have taken place in this fluid. These changes may have been *primary* and *essential.* There is reason to think, at any rate, that they play a very important part in the pathology of these diseases. They deserve further study, and they ought never to be overlooked; but their relations to these diseases are very far from being ascertained. In another class of affections, the acute phlegmasiæ, the alterations in the composition and character of the blood are pretty evidently the result of the disease. They are secondary and not primary in their relations. This may be the case in typhoid fever, and its nervous

diseases. I am disposed to look favorably upon this partial return of the old humoral pathology, and to hope much from its cultivation and development; but I do not think that we can yet apply it very confidently or extensively to the interpretation of morbid phenomena. This upon the whole, it seems to me, is as far as we can go, safely and philosophically, in our attempt to explain and to account for the morbid processes and alterations which constitute typhoid fever; or to establish, in other words, a *theory* of the disease.

# CHAPTER X.

## TREATMENT.

THERE are few diseases of equal frequency and importance, the treatment of which is more unsettled than that of typhoid fever; and there is certainly no disease, the therapeutics of which has, within the last few years, attracted more attention than this. Various, and to some extent opposite modes of management have been adopted by different practitioners; they have been conducted on a large scale, for the most part in a fair and impartial spirit, and under circumstances favorable to the discovery of the truth; but they have not yet resulted in the establishment of any uniform and satisfactory method of treatment. There is no unanimity in the opinions and conduct of different practitioners.

Under these circumstances, it is somewhat difficult to decide upon the best course to pursue, in treating of the subject, in a work like the present. It is impossible, within any reasonable limits, to describe in detail all the different plans of treatment that have from time to time been adopted, or that are still pursued, together with their actual or alleged results. Still, the completeness of the work and the interests of humanity alike require that the actual state of our science in this respect, the sum and the result of our observations and researches, so far as these can be ascertained, should be fully and fairly stated. I shall therefore endeavor to do this, as far as it is possible. I shall describe the several modes of management which have been most extensively followed, and most thoroughly studied, by those leading and distinguished men who have been most favorably situated for the investigation of this subject. In doing this, I shall not often enter into any detailed and particular statement of the effects of individual remedies in single cases, or upon single symptoms which different physicians allege that they have seen produced. It will be sufficient for my purposes to state, in general terms, the results of their investigations and analyses.

## ARTICLE I.

### DR. JACKSON'S METHOD OF TREATMENT.

Dr. Jackson, of Boston, after having been for many years an extensive and careful observer of typhoid fever, both in public and in private practice, and after an accurate and circumstantial re-examination and analysis of the effects of remedies upon the disease, as they were exhibited in the wards of the Massachusetts General Hospital, arrives finally at the following conclusions, which it is impossible to give so well in any other way as in his own words. They would suffer by any alteration or abridgment.

"First, that, on the attack of this disease, the patient should immediately desist from labor and mental exertion, abstain from food, except of the simplest liquid kind, and place himself in bed, or at least in a state of repose.

"Second, that free evacuations should be made at the beginning, and that, in doing this, a day is important. It is better that they be made the first day than the second, better on the second than the third; but that it is especially important that they should be made as early as the third day. That an emetic of tartarized antimony should first be given, and then an active cathartic, or the two in combination. If there is constipation at the time, an active enema, given at first to disembarrass the bowels, would no doubt facilitate the action of an emetic. If the vomiting and purging are not followed by great relief, venesection should be practised on the following day, unless the constitution should be very feeble, or the case very mild.

"Third, if the disease has not subsided after the evacuations, tartarized antimony should be given every two hours in increasing doses, after the method of Odier of Geneva. Meanwhile, the bowels should be kept open, and, for two or three of the first days, it would be well that calomel should enter into the medicine used for this purpose; not, however, giving more than one moderate dose in a day. It should be noted, however, that usually, after the antimony has been given for forty-eight hours, this will act sufficiently on the bowels, and that sometimes it must be restrained by opium.

"Fourth, that, when the disease subsides early under any active treatment, it is quite essential that the patient should be restrained from solid food for two or three days, at least, after he has an appetite for it; and that he then use vegetable food in small quantities, for two or three days more. Likewise, that he should not be allowed to make any efforts of either body or mind until his convalescence is fully established. By this, it is not intended that he should be confined wholly in bed, but that he should be confined to his chamber, and not allowed to talk on business, nor on any interesting subject.

"Fifth, that evacuations, vomiting and purging at least, may be resorted to with advantage in the second week; and that perhaps some benefit may be obtained from antimony in small doses, when commenced in that week. But that, after that period, no active treatment should be employed, or none which will cause any serious inconvenience to the patient.

"Sixth, as to diet. There is no point probably on which all practitioners are more agreed than that food should be withheld from persons affected with the disease in its early period, except only the mildest or most bland liquid articles. Probably food would be injurious in its early period, at least, if it could be digested. But it cannot be digested perfectly, and often not at all, and that alone should forbid the use of it. When the disease is arrested or mitigated by treatment, it is very certain that an indulgence in the use of food is most commonly injurious, and that the cautions already stated are not too severe. When, however, the patient is fully reinstated, he must be allowed some extra food for the recovery of his flesh and strength. This must be done cautiously; but an extreme and protracted abstinence is injurious. When the disease runs its usual course, and the appetite for food returns, is there any danger in the indulgence of it? To this question I answer, in proportion as the return of appetite takes place early, more caution is necessary. If it takes place at or about the end of the third week of the disease, if it is decided, and if it is accompanied by a cleaning of the tongue, almost any article which the patient craves may be allowed him with safety. The appetite is usually a sufficient guide as to the quality of the food; but not as to quantity. In a large proportion of cases, it will be found a most uncertain guide as to quantity. Hence it is necessary to begin with small quantities, and to increase gra-

dually. It is equally necessary to make the intervals long between the portions of solid food, which are given in the early period of convalescence. At first, there should be one portion of solid food in the day; the next day, if everything is favorable, two portions, with five or six hours between them; and two or three days later, watching the effects, three meals may be allowed. But we are not merely to feel the pulse under these circumstances, to see if the fever has increased. The danger is not, I apprehend, that the system will be too suddenly nourished. It is that the enfeebled organs of digestion may not be able to digest the food. We must, therefore, watch all the signs which refer to those organs. Only, if the head should ache, or other organs be disturbed, we should remember that the prominent signs of indigestion are often shown elsewhere than in the stomach, and stop the food till it appears whether this is not now the case. It is also to be constantly remembered that constipation of the bowels will be followed by indigestion, and that evil must, therefore, be guarded against.

"Seventh, cordials. On this, as under the last head, I must give the convictions arising from the most careful observations I have been able to make in many years. I cannot adopt the more accurate mode of the numerical system. Nor in this case could this system be usefully followed, unless with the greatest attention to the state of each case. It has appeared to me that we should not adopt the rule to give cordials, nor to withhold them, in every case. When a patient is induced to take cordials reluctantly, they seldom benefit him, and are often followed by injury. When he is greatly enfeebled, at a late stage of the disease, he may be safely asked if he wishes for them, and if he does he may try them; they will seldom hurt him then, if he takes no more than is grateful to him. When he spontaneously demands them, as late as the third week, they will almost always be found useful. Now in following these rules, I have occasionally found a patient who would take a large quantity of some cordial liquor. But this has been rare. Few take them longer than two or three days, and the majority of patients do not take them at all. It is proper to add that by cordials I mean vinous liquors. I have most commonly found cider grateful in the first instance, beginning with an ounce, two or three times a day, and increasing according to the effects. Sound beer or ale is more rarely but sometimes grateful. In patients much exhausted, however, the

strong foreign wines, Sherry, Port, and Madeira, are found most useful. These articles may be diluted, or may be employed to season articles of diet, or may be given alone, according to the taste of the patient."[1]

It may be added here that Dr. Jackson, during the early period of his practice, in common with most of the New England physicians, made use also of calomel in the treatment of typhoid fever. This article generally made a part of the purgative given at the commencement of the disease.

It was afterwards continued in small and frequently repeated doses, combined, according to circumstances, with ipecacuanha, or antimony, or opium. Moderate ptyalism was looked upon as a favorable occurrence, although profuse salivation was dreaded. Dr. Jackson's faith in the usefulness of calomel was shaken a few years after the commencement of his practice; when the Massachusetts General Hospital was opened, he still resorted to it occasionally, during the first few days of the disease, and particularly when any secondary inflammation supervened; but confidence in the specific power of the medicine grew less and less, and, since 1830, its use in the hospital has been nearly abandoned. Dr. Jackson informs me that his convictions of the efficacy of *early evacuations* in the treatment of typhoid fever, founded on his experience in private practice, are not less strong than those which rest on the careful analysis which he has made of the results of his hospital cases.

## ARTICLE II.

### DR. NATHAN SMITH'S METHOD.

I shall now give a summary of the mode of management followed in typhoid fever by the late Nathan Smith. He begins his remarks on the treatment of this disease by saying that he had never seen a single case in which he was satisfied that he had been able to cut short and arrest its progress; and that, in all cases where the disease is going on regularly in its course, without any symptom denoting danger, and without any local

[1] Dr. Jackson's Report on the Typhoid Fever, Med. Com. of the Mass. Med. Soc., vol. vi. part ii. p. 168, *et seq.*

distress, active interference will be likely to do more harm than good. Under such circumstances, he thinks no medicine should be given. He also expresses his conviction that all powerful remedies or measures made use of in the early stage of the disease are very liable to do harm, and that those patients who are treated with them in the beginning of the fever do not hold out so well in its latter stages. He says that he has seen many cases in which persons in the early stages of this disease were moping about, not very sick, but far from being well, and who, upon taking a dose of tartrate of antimony, have been immediately confined to their beds.[1] He adds in another place these remarks: "In cases of simple mild typhus, where there is no nausea at the stomach, no pain in that region, where the heat is moderate, and the pulse not greatly altered in frequency, I am clearly of opinion that we had better leave the disease to cure itself, as remedies, especially powerful ones, are more likely to do harm than good. In such cases, the patient gets along better without medicine than with; all that is required is to give him simple diluent drinks, a very small quantity of farinaceous food, and avoid as much as possible all causes of irritation."

Dr. Smith opposes the plan, then adopted by some New England practitioners, of general and almost indiscriminate bloodletting, at the commencement of the disease. He would bleed only where there was "uncommon pain in the head, accompanied with great heat in that part, a sense of fulness, and a throbbing of the temporal arteries; or marks of congestion in the viscera of the thorax, such as pain in one or both sides of the chest, increased by a full inspiration." Under these circumstances, he thinks that the loss of from twelve to sixteen ounces of blood will often mitigate the severity of the disease, and enable the patient to go through it with more safety. The immediate effects of bleeding have not appeared to him very obvious; and he says that, where the pulse is very frequent, the operation is seldom or never attended with any advantage.

Emetics are recommended by Dr. Smith only where there are nausea and oppression at the stomach, either at the commencement or during the progress of the disease. His favorite articles are ipecacuanha, eupatorium, or sulphate of zinc, given either

[1] Smith's Medical and Surgical Memoirs, p. 72, *et seq.*

singly or combined. Tartrate of antimony he looks upon as an inappropriate and unsafe remedy. The bowels, he says, should be kept open with gentle laxatives, but active and indiscriminate purging he considers hurtful. Blisters, according to his experience, sometimes relieve local pains, and are sometimes injurious. They may as well, he thinks, be generally dispensed with. Stimulating remedies given internally, with external heat, for the purpose of exciting active perspiration, have always appeared to him to be attended with bad consequences, at all periods of the disease. Opium, for the purpose of procuring rest and quietness during the night, when it is not contraindicated by high febrile excitement and pain in the head, and in combination with ipecacuanha and camphor, to restrain immoderate diarrhœa, he says, may be used to advantage. He has seen in many instances very serious evils from the specific action of mercury, but no benefit. Cinchona he has found to produce a good effect in some cases where the surface was cold, and also where there was hemorrhage. The mineral and vegetable acids, the alkalies, refrigerants, as they are called, such as sulphate of magnesia, super-tartrate and nitrate of potass, he regards as unimportant or questionable remedies.

The most effectual refrigerant and febrifuge, in the hands of Dr. Smith, consisted in the free use of cold water externally. He is very warm and decided in his commendation of this remedial measure. He says that there is nothing else so powerful in allaying morbid heat of the surface, in diminishing thirst, and in quieting restlessness and agitation. He directs the body of the patient to be uncovered, and then to be sprinkled or dashed repeatedly with pure cold water. He allows cold water for drink, as freely as the patient may desire, during the whole course of the disease.

Dr. Smith closes his account of his expectant and rational system of treatment in typhoid fever with the following directions for the general care of the patient:—

"When an individual is first taken sick with typhous fever, we should expect a disease of considerable length, and make our arrangements accordingly. If the thing is practicable, he should be kept in a spacious room, the larger the better. His bed should be of straw, or husks, especially if it is in the warm season; and it should not be placed in the corner, but brought out into the

room. We should contrive to have a current of air pass over the bed by means of doors and windows. * * * In the warm season of the year, the windows should be kept open night and day. All the furniture should be removed, except such articles as are required for the patient's use. The windows should be darkened, or something opposed to the light, in such a way as to still admit the air. The room should be kept as quiet as possible, since noise is injurious, and no more persons should be admitted than are necessary to take care of the patient, which will, if he is very sick, require the labor of more than one.

"The room should not be carpeted, and the floor should be often washed with pure water, or soap and water; and in the hot season, it, as well as the walls, may be kept wet with water during the heat of the day.

"Cleanliness is absolutely essential to the patient's comfort, and no dirty dishes or useless medicines or food should be suffered to remain in the room. All excrementitious matter should be removed immediately. In the warm season of the year, the bed and body linen should be changed every day, and in the cold, every other day at farthest.

"The patient's body and limbs should be cleansed every day with a piece of sponge and warm water, or soap and water. If a male, he should be shaved every day or every alternate day, and if a female with long thick hair, it should be cut off or thinned so as to leave but little of it the full length."[1]

## ARTICLE III.

### CHOMEL'S METHOD.

The treatment of typhoid fever has been, especially for the last twenty years, a subject of great interest amongst the physicians of the large hospitals of Paris. It was in these institutions that the symptomatology, diagnosis, and pathology of the disease were first thoroughly studied; the opportunities which they offer for a careful trial and comparison of different modes of management are unequalled; and these opportunities have been very faithfully made use of by a considerable number of cautious, accu-

[1] Smith's Medical and Surgical Memoirs, pp. 95, 96.

rate, and philosophical observers. Amongst them may be mentioned, particularly, and this without making any invidious distinction, Chomel and Louis. Chomel has been for many years attached either to La Charité or to the Hôtel Dieu; he has grown old in the constant and conscientious study of disease; and now, in the ripe maturity of age and experience, is unsurpassed, in the capital of France, as a man of practical sagacity and skill. I shall first give a summary of his practice in this disease.[1]

His treatment is for the most part what is called rational or symptomatic; that is, it is adapted, as far as common sense and experience enable us to do this, to the varying state and condition of the patient in different forms of the disease, and in the several stages of its progress.

Simple and benign cases may be very safely trusted, he says, to refreshing drinks, such as lemonade, currant water, orange water, or pure water, taken at short intervals, and in such quantities as the patient may desire; emollient fomentations or poultices upon the abdomen, when this is painful; sponging the surface of the body with vinegar and water, or cold affusions, if the skin is hot; mucilaginous injections, several times a day; cold applications to the head, when this is the seat of pain, and hot poultices or sinapisms, if there is a disposition to drowsiness and disturbed sleep. These measures, combined with fresh air, cleanliness, and quiet, will generally conduct the patient safely through this form of the disease. Still, Chomel is inclined to think that, even in these cases, a single moderate bleeding at the commencement of the fever, while it diminishes somewhat the severity of the headache and shortens the period of its continuance, may also be of some utility in preventing the development of ulterior complications, and exert some favorable influence upon the march and termination of the disease. If the headache or the pains in the abdomen are severe, leeches may be applied below the mastoid processes for the former, and near the anus for the latter. If the bowels are constipated, they may be opened by some gentle laxative; if the diarrhœa is troublesome, it may be moderated by rice water, injections of starch and water, and so on.

[1] Leçons de Clinique Médicale. Par A. F. Chomel, p. 449, *et seq.*

In the inflammatory form of the disease, Chomel adopts a more decided antiphlogistic course, adapted to the intensity of the symptoms and to the age and vigor of the patient. The bleeding is to be repeated once or twice, leeches applied where they are indicated, and an entire abstinence, even from liquid nourishment, enforced upon the patient. When the disease is marked by bilious symptoms, a yellow fur on the tongue, a bitter taste, nausea, vomiting of bile, and constipation, the same general course is to be pursued as in its simple form. Chomel has not often resorted, even under these circumstances, to the use of emetics, since he has generally found that the symptoms just enumerated have subsided under the simple hygienic treatment. He thinks, however, that in some of these cases, where the disease comes on suddenly, and there is reason to suppose that the stomach may be oppressed by its contents, an early emetic would be useful. Chomel's mucous variety of typhoid fever is too indistinctly marked to make it necessary to notice the slight modifications of treatment which he thinks it may require. In the ataxic form of the disease, there are no uniform rational indications. If it is attended with highly inflammatory symptoms, the active antiphlogistic course is to be pursued; if it is attended with great debility, tonics and cordials are to be given.

In the adynamic form of the disease, Chomel adopts a decided tonic and stimulant treatment, adapted in activity to the degree of prostration and debility. He speaks with great confidence of the propriety and necessity of this course, in these cases. Where the failure of muscular strength is extreme, indicated by the difficulty and languor of all the voluntary motions; the feebleness of the voice; the sinking of the features; the fetor of the breath; sighing and faintness on assuming the sitting posture; smallness and weakness of the pulse; and coolness or coldness of the surface; it is necessary to administer, more or less freely, according to the number and gravity of these symptoms, tonics, aromatics, and cordials. Amongst these, the most important are cinchona, wine, camphor, and ether. Chomel prefers the cinchona, in the form of the extract, administered in an aromatic potion, to the amount of one or two ounces in the twenty-four hours. He also employs it in decoction or infusion, sweetened with lemon syrup. He doubts whether the sulphate of quinine is of equal efficacy as a tonic; so that, notwithstanding the inconveniences frequently

attending the administration of the extract, especially in large quantities, he still prefers it to the former. At the same time that the cinchona is employed in this manner, he uses it, either in decoction, or in extract, in the form of enemata.

While the adynamic phenomena already enumerated are only moderate in degree, and before the necessity for the free use of cinchona has yet appeared, the lighter wines, such as those of Bordeaux and Burgundy, may be given: when these phenomena are more strongly marked, the stronger wines, such as Madeira, Sherry, and Port, must be resorted to. These may be given to the patient in his drinks; or, as is best in the more grave cases, undiluted. The quantity to be administered must depend, of course, upon the urgency of the symptoms calling for its use. A tablespoonful of one of the strong wines may be given at intervals of from one to three or four hours. The effects of these remedies must be carefully watched; and if they produce febrile heat, and restlessness, pain in the head, or any other obvious local disturbance, their use must be suspended, or modified. It will not often be either necessary or safe to resort to them in the early periods of the disease; although such will sometimes be the case. It is commonly during the second or third week, or even later, that this tonic and stimulant medication is called for; and it is often a nice point, in the therapeutics of typhoid fever, to seize upon the exact period when it is required and will be borne. Ether is to be used when there is an urgent necessity for rapid and immediate stimulation; Chomel also occasionally combines it with the mixture of the extract of cinchona. Camphor he rarely uses, except as an ingredient in the tonic injections. In extreme cases, where there is a combination of the ataxic and adynamic elements, he recommends the use of musk in large doses, by the mouth and by injection.[1] He speaks more decidedly of the evils attending the application of blisters, than of any benefits to be derived from them.

The epistaxis will not often require any special attention. If it is at all copious, the application of a cold astringent solution will generally be sufficient to arrest it. Sometimes, however, it is necessary to resort to mechanical compression, by plugging up the nostrils. To control the hemorrhage from the bowels, Cho-

[1] Gazette Médicale de Paris, March, 1835.

mel recommends iced water for drink in injections, and applied upon the abdomen; lemonade, and the extract of rhatany. The formation of ulcers should be guarded against, by avoiding constant pressure upon those points where they are most liable to occur; and when once formed, they should be protected from irritation, and properly dressed. Local inflammations, occurring in the early periods of the disease, or when the debility and prostration are not strongly marked, are to be met by local and general bleeding, adapted to the circumstances of the case. If the patient is in a condition not likely to tolerate these measures, dry cupping and sinapisms in the neighborhood of the inflammation, which is most commonly a pneumonia, may be substituted. When these complications take place during the adynamic period, or in the adynamic form of the disease, they do not contraindicate the use of stimulants and tonics. The local inflammation under these circumstances will be more surely relieved, or enabled to relieve itself, by a removal of the extreme general debility, through the agency of a tonic medication, than by the abstraction of blood. Perforation of the intestine is to be treated after the manner of Drs. Graves and Stokes of Dublin; by entire abstinence from drinks and food; absolute rest; *and large and repeated doses of opium.* In the management of the patient during convalescence, Chomel urges the importance of a mild diet and the avoidance of fatigue; and in cases where there seems to be some obstacle to the entire re-establishment of health, he recommends a removal from the city to the country.

In 1831, at the suggestion of a young physician who attended his clinical lectures at the Hôtel Dieu, Chomel commenced the trial of chloride of soda in the treatment of typhoid fever. He did not change in any other respect his system of management, but superadded the use of this remedy to the rational plan of treatment which has just been described. He administered the chloride in a sweetened solution of gum Arabic, containing from one grain to one grain and a half to the ounce. Of this solution, his patients generally took from fifty to ninety ounces in the twenty-four hours. Injections of the same solution were given morning and night; the body of the patient was freely washed, several times a day, with a solution of the chloride in water; poultices moistened with it were applied to the abdomen; the bedclothing was sprinkled with it; and vessels containing it were placed

under the bed. In order to test as nearly as possible the value of this specific medication, it was mostly confined to well-defined cases, at least of sufficient severity to be attended with some danger; and in which it could be applied at the beginning or early in the disease. The results of this plan in the hands of Chomel, from 1831 to 1834, the year in which his work on typhoid fever was published, were various and not very decisive. In that work, however, he expresses himself, at the close of his remarks upon this subject, in the following terms: "Finally, although the results of this treatment have been very different in different years, it has still been attended with more success than any other. Several distinguished practitioners have informed us that they have arrived at the same conclusion. We shall continue, then, our trials with a mode of treatment which, combined with the rational method, has thus far given us, notwithstanding its failures, more satisfactory results than any other." Subsequent to this, however, in 1835, with a frankness, a conscientiousness, a single-minded regard for the truth which it is beautiful to witness, he says: "The hopes which our first trials with the chloride had permitted us to conceive have not been realized. The results which have thus far been obtained are not sufficiently encouraging to justify us in the expectation of continuing our trials with much chance of success."[1]

## ARTICLE IV.

### LOUIS'S METHOD.

Louis, in the second edition of his *Researches on Typhoid Fever*, published in 1841, seems somewhat undecided in his opinion upon the therapeutics of the disease.[2] He hesitates between the rational method which he had generally followed, and the purgative plan adopted by De Larroque. Putting the latter out of consideration for the present, Louis, after a very careful and thorough examination and analysis of the effects of remedies, finally fixed upon the following general plan of treatment, as the best that could be pursued in the present state of our knowledge upon this subject.

[1] La Lancette Française. August, 1835.

[2] Louis on Typhoid Fever, vol. ii. p. 379, *et seq.*, 2d ed.

Early in the disease, and at any rate within the first ten or twelve days, he resorts to general bloodletting, its extent and repetition to be proportionate to the strength and vigor of the patient and the severity of the disease. If the case is mild, or of moderate severity, and the constitution of the patient not very robust, a single bleeding of twelve ounces will be sufficient; in other cases of greater severity, and where the constitution is sound and vigorous, the bleeding should be somewhat more copious, and repeated once or twice. Louis is satisfied that this remedy, within these limits, is generally useful in shortening to the extent of a few days the average duration; in diminishing the gravity, and of course in lessening somewhat the mortality, of the disease. After the fifteenth day, in severe cases, and at an earlier period in mild ones, where there is but moderate febrile excitement, bloodletting should not be practised. Under these circumstances, the operation does no good, and retards instead of hastening the period of convalescence. Louis has not found the immediate effects of bloodletting, either upon the general severity of the disease or upon any of the single symptoms, to be very marked or obvious. In some cases, the operation is followed, either at once or in the course of twenty-four hours, by an amelioration of one or more of the most urgent symptoms: in some cases, on the other hand, it is followed by their aggravation; and furthermore, these changes in the severity of the symptoms are such as frequently occur where blood-letting has not been resorted to, and where, indeed, no active medication has been used.

This measure is to be aided by suitable drinks, emollient enemata, and cool fresh air. The drinks should consist of sweetened gum water, or of this in combination with artificial Seltzer water, in order to obtain the effects of the carbonic acid gas. They should be given in large quantities, as freely as the patient may desire. Mucilaginous enemata are to be given once a day, during the early period of the disease; and subsequently when the diarrhœa is troublesome, two or three times a day. If, notwithstanding their use, the discharges from the bowels continue to be frequent and debilitating, a small injection containing a few drops of laudanum should be substituted.

Tonics are considered by Louis not only very useful, but very necessary, under certain circumstances. When the general febrile excitement has subsided; when the prostration of strength is

extreme; when the pulse is only moderately accelerated, or not at all; when there is slight diarrhœa, and little or no tympanites; they should be at once and freely resorted to. Louis prefers the sulphate of quinine to any other article, given in an aromatic or mucilaginous draught, in doses of from eight to twenty grains. He gives the patient at the same time a sweetened infusion of cinchona for drink; and if there is diarrhœa, he makes use of tonic and astringent injections.

Louis dismisses blisters from his plan of treatment with strong and unqualified condemnation. He says there is no evidence that they are of any benefit, and that not unfrequently they add to the gravity, the inconveniences, and danger of the disease. For the last ten or twelve years he has abandoned them entirely. He recommends opium, after the method of Graves and Stokes, in cases of perforation of the intestine, though in smaller doses. He reports a case, probably of this accident, which occurred at the Hôtel Dieu in 1840, and which was cured by this method. Opium, he thinks, is also of use in allaying some of the nervous symptoms; such as twitching of the tendons and slight delirium, when the febrile excitement is not very high. When the delirium is violent, he has seen little or no benefit from the use of leeches, or the application of ice to the head; but he recommends, in this case, if the face is flushed, even if the disease has reached its twelfth or fifteenth day, and even if the patient has already been twice bled, another moderate bleeding. When the meteorism is extreme, he thinks it may sometimes be diminished by the administration of enemata, consisting of magnesia in an infusion of flaxseed. In grave cases, the condition of the bladder should be carefully watched from day to day, and retention of urine guarded against. It is unnecessary to repeat his observations upon the importance of rest, cleanliness, and free ventilation, during the progress of the disease; and of light diet and the avoidance of fatigue during convalescence.

In concluding this subject, Louis makes use of the following words: "It results from all that precedes, upon the effects of the principal therapeutic agents at present employed in the treatment of typhoid fever, that these agents possess a favorable though limited influence upon the march and termination of the disease; and that an impartial examination of facts points out, with a good degree of precision, the best method of employing the three

principal means which experience has placed in our hands; to wit, bloodletting, evacuants, and tonics. Furthermore, the limited degree of success which has thus far been obtained ought not to discourage the friends of science, nor prevent them from hoping that a more appropriate and successful treatment of this disease will yet be discovered. Who could have foreseen the effects of opium, of cinchona, or the preservative power of the vaccine virus? What accident and observation have hitherto done they are still able to do, without doubt they still will do; and therapeutics, like the other parts of science, ought to hope and to expect everything from observation."

## ARTICLE V.

### BOUILLAUD'S METHOD.

Some twenty-five years ago, Bouillaud introduced a mode of practice in the treatment of all acute diseases, and amongst them of typhoid fever, which he claims to be of his own discovery, and which he claims also to have been attended with extraordinary success. This mode consists in copious and frequently repeated abstractions of blood, and in the application of leeches or of scarified cups in the intervals.[1] The number of his bleedings varies from one to five or six, of from twelve to sixteen ounces each; and nearly or quite an equal quantity of blood is taken from the patient by means of leeches or cups. This lavish waste of the vital fluid is not confined to the earliest period of the disease, since many of the patients who are subjected to it are not received into the hospital until the second week of the fever. The average day, indeed, is as late as from the ninth to the twelfth. This method he calls that of bleeding *coup sur coup*, blow upon blow, or dash upon dash, or again and again. He claims to have reduced the practice of bloodletting in acute diseases to an established *formula*. In connection with this subject, he also announces, in loud and confident tones, that *success or cure is the law; failure or death the exception*. He claims for his new method an almost infinite degree of superiority over those generally

[1] Essai sur la Philosophie Médicale, etc. Par J. Bouillaud, p. 412, *et seq.* Bruxelles, 1836.

in use; and that the actual average mortality, under it, is less than half as great as under the old and generally adopted plans.

The bold and arrogant terms in which these high pretensions were put forth, the offensive freedom of Bouillaud's remarks upon the practice of his contemporaries, to say nothing of the importance of the subject, and the interests of humanity and science, soon led to a thorough examination and a discussion, generally warm and sometimes intemperate, of his claims. It is not my intention to enter into a history of these proceedings. It is quite sufficient for my purpose to say that his statistical tables were *rectified*, his mistaken diagnoses were corrected, and the positive results of his practice shown to be in no degree more favorable than those of other physicians; probably less so. It ought to be said, however, before dismissing the subject, that if Bouillaud has failed to establish the superiority of free and repeated bleeding in the treatment of typhoid fever, he seems at least to have shown that the practice is borne in this disease with a greater degree of impunity, and is attended with less danger, than had generally been supposed possible.

## ARTICLE VI.

### DE LARROQUE'S METHOD.

There is still another exclusive mode of treatment, very unlike that of Bouillaud, which has been pretty extensively followed within the last ten or twelve years in the hospitals of Paris. I mean that by evacuants, and principally by purgatives. The fifteen or twenty years' reign of the Broussaisian doctrine of fevers, in Paris, had almost entirely banished emetics and purgatives from the treatment of these diseases. Their use was formally and absolutely proscribed. It was murderous and incendiary to give either one or the other. After this medico-doctrinal dynasty had had its day and gone by, therapeutics became gradually more eclectic and less exclusive. Different modes of practice were adopted by different physicians in the same disease; and it could hardly fail to be discovered that the fears which had so universally prevailed, founded upon theoretical considerations, of the injurious effects of purgatives, were either without foundation or

very much exaggerated. Lerminier of Paris, and Bretonneau of Tours, had occasionally made use of purgatives in the treatment of typhoid fever; but M. De Larroque, a physician of the Necker Hospital, was the first to adopt the evacuant or emetico-cathartic plan as a general and almost exclusive mode of treatment, in this disease. He commenced his trial of this method in 1831, since which time it has been more or less extensively followed by Piedagnel at the Hôtel Dieu, Andral at La Charité, Louis at La Pitié, and by others. The plan adopted by De Larroque is the following: He usually commences his treatment by the administration of an active antimonial emetic; and this is to be repeated until free vomiting is procured. The operation of the emetic is to be immediately followed by the use of purgatives, *without much regard to the state of the bowels, the condition of the patient, or the period of the disease; and these are to be continued regularly up to the time of convalescence.* His principal articles are Seidlitz water, castor oil, and calomel. To these remedies, he adds emollient poultices to the abdomen, when there is pain in this region; mucilaginous injections, morning and night; acidulated drinks; and, when the febrile excitement subsides, light tonics. Louis, in the second edition of his *Researches*, expresses himself pretty strongly in favor of the purgative treatment. He himself made use mostly of Seidlitz water, and he thinks that his success with this method was greater than with his former practice.

Barthez and Rilliet are opposed to the purgative plan of treatment in children; they think it increases the danger of enteritis.

## ARTICLE VII.

### MISCELLANEOUS.

In addition to the accounts which have been given of the foregoing systematic methods of treatment, it may be well to mention in conclusion some few individual remedies, and their application, which have been recommended by different practitioners. M. Barthez and M. Fouquier amongst the French, and Drs. Dobler and Skoda amongst the Germans, have made use of alum; supposing that it might act directly in retarding the progress and in diminishing the severity of the intestinal lesion. I am not

aware that there is yet any satisfactory proof of its utility. Dr. Gerhard thinks that, in mild cases, gentle purgatives, such as a few grains of blue pill, followed by castor oil or Seidlitz powder, should always be given at first, for two or three days; and that whenever constipation is present, the repetition of the laxative is useful. If the dizziness and headache are troublesome, he says that they may be removed, or greatly relieved, by cupping, by a mustard pediluvium, or by a blister to the nucha. From the latter application, when properly timed, that is, after the active febrile excitement has subsided, Dr. Gerhard has never known any injury to result, and he has generally found it to mitigate the severity of moderate cerebral symptoms. In both severe and mild cases, towards the decline of the disease—that is, about the end of the second week if it be severe, and a little earlier if it be mild—he makes use of small doses of calomel, or of blue pill, combined with ipecacuanha, and with a minute quantity of opium, if the diarrhœa is troublesome. One or two discharges from the bowels daily, he thinks, are of service in all stages of the disease.[1] In cases of hemorrhage from the bowels, I always make free use of opium and sugar of lead, and generally with entire success.

I have already spoken of the unsettled and discordant state of the professional mind in regard to the therapeutics of typhoid fever. It would be no difficult matter to multiply and strengthen the proofs of this truth, already sufficiently shown by the foregoing details. This, however, would be but an unprofitable labor, in the present state of our knowledge of no practical value. Under the circumstances in which we are placed, amidst the claims and pretensions of conflicting opinions, it seems to me that we are not now justified in the use of any ultra or exclusive system of treatment; like that, for instance, of Bouillaud, or De Larroque. For the present, our management of the disease must be eclectic and rational, not exclusive and specific. In its early stages, unless in cases where there may be special contraindications, it seems to be generally conceded that a moderate antiphlogistic course is the best that can be adopted; and that active emetico-cathartics, if used at all, ought to be used at this same early period. In the subsequent progress of the disease, a mild altera-

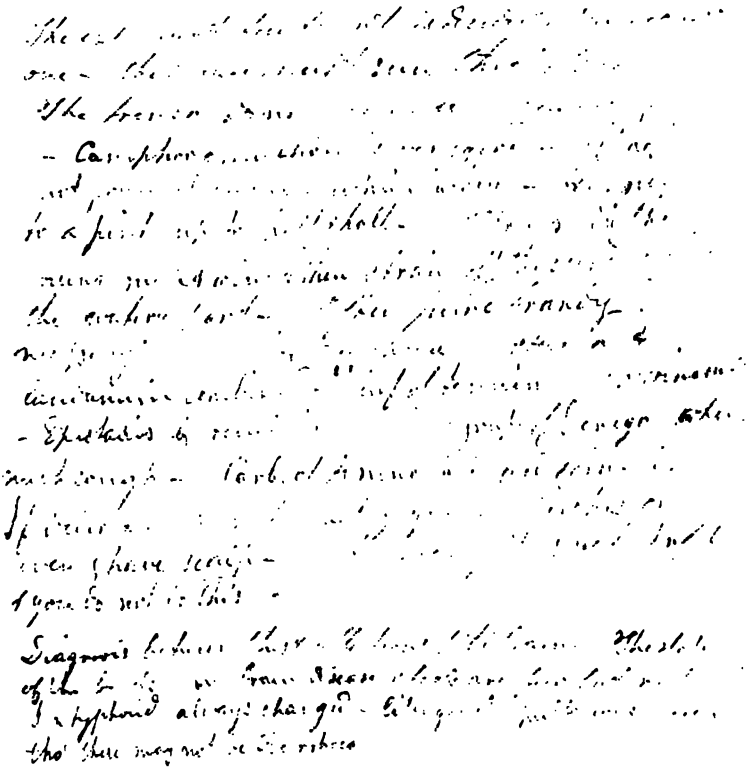
[1] Medical Examiner, vol. iv. pp. 150, 151.

tive and rational plan, keeping the bowels moderately loose by laxatives when this is necessary, and meeting particular symptoms with such remedies as experience has shown to be most suitable, would appear to be most appropriate and successful. After the first few days, in cases of moderate or average severity, with no special or urgent indication, it is quite clear, I think, that all treatment in any way decidedly active or perturbating is to be avoided. The tendency of the disease in all such cases is towards a natural termination in health; and there is no evidence that the dangerous complications which are liable to occur can be prevented by any active interference. In all grave cases, and especially when stupor or delirium is present, the region of the bladder should be carefully examined every day, in order to guard against the distension of the organ by urine. I may remark in this connection, notwithstanding what has been said, that carelessness or indifference in the management of the disease, growing out of the unsettled state of opinion in relation to its treatment, and of the limited control which we possess over it, would be as criminal a dereliction of duty as it would be unbecoming in a cultivator of the science and a practitioner of the art of medicine.[1]

We may hope that our treatment of this disease will yet become more successful and more uniform; more exact in its application, and more positive in its results. Many "ministers and interpreters of nature," faithful to their high vocation, and competent to its duties, are zealously and patiently occupied in endeavoring to accomplish this end. Guided by a sound philosophy, relying upon the one great means of ascertaining the properties and

[1] It is both interesting and gratifying to see the good sense and sound judgment of some of the continental practitioners of the last century, in the management of this disease. Burserius, after having given a most excellent description of the fever, recommends moderate bleeding where there is much excitement, a mild emetic at the commencement, diluent drinks, and then says: "But a simple plan of cure, if it is to be recommended in any case, is certainly to be adopted in the present. For the less the operations of nature are disturbed by art, the milder and safer the remedies we employ are, the more successfully do we restore the patient's health."—Institutions Pract. Med., vol. i. p. 506. And again, he adds: "The proper regulation of the diet alone, and time, perform great part of the cure. The poorer people, generally content with patience and proper attention to the regulation of the diet, despising all kinds of drugs, recover more certainly."—*Ibid.*, 530.

relations of all forms of matter, inorganic and organic, that of observation, they or their successors may yet find, by persevering experiment or fortunate discovery, methods of modifying the living organization, and of correcting its disordered actions, which shall give us a much greater control over the disease than we are now able to exert.



# CHAPTER XI.

## DEFINITION.

We may, provisionally at least, adopt the following definition of the disease, the natural history of which has now been given.

Typhoid fever is an acute affection; occurring most frequently between the ages of fifteen and thirty years, sufficiently often previous to the former period, and but rarely after the fortieth year of life; attacking, at least in cities and amongst adults, in a large majority of instances, persons who are recent residents; occasionally, and under certain conditions, capable of transmission from one individual to another; rarely occurring twice in the same person; more common in certain countries than in others, but not confined, so far as is known, to any geographical localities or regions; prevailing at all seasons of the year and in all climates, but more common in the autumn than at other periods, and in temperate and northern than in southern and hot latitudes; sometimes sudden and sometimes gradual in its access; attended at its commencement with chills or rigors, not commonly very severe, and usually repeated, at uncertain intervals, for the first few days; then, with more or less feverish heat of the skin; generally, with increased quickness of the pulse; somewhat accelerated respiration; slight, dry cough; an extensive sonorous or sibilant rhonchus; with pain in the head, back, and limbs; loss of the vigor, and in grave cases perversion of the faculties of the mind; dull expression of the countenance; more or less somnolence or watchfulness; giddiness or dizziness; ringing, roaring, or buzzing in the ears; occasional epistaxis; great loss of muscular strength; in grave cases, with spasmodic twitchings of the muscles, especially those of the forearms and hands; with entire loss of appetite, and with thirst; sometimes with nearly a natural appearance of the tongue, and at others with a red, dark, dry, glutinous, cracked, trembling state of this organ; sordes upon the teeth and gums; occasional nausea and

vomiting; frequent diarrhœa; abdominal pains and tenderness; these latter not unfrequently most marked in the right iliac region; dulness on percussion over the spleen; meteoric distension or rigidity of the abdomen; the skin, particularly of the front part of the body, being usually the seat, in the course of the second and third weeks of the disease, of a peculiar eruption, not commonly abundant, consisting of small, circular, or oval spots, of a bright rose color, slightly elevated above the surrounding surface, and readily disappearing under pressure; coming out successively one after another for several days, remaining usually for somewhat more than a week, and successively and gradually fading away and finally disappearing; the blood, when drawn from the body, having its proportion of fibrine diminished in a degree closely corresponding to the gravity of the affection: which symptoms differ very widely in their duration, in their march, in their severity, and in their combinations, in different cases; no one of which is invariably met with, and several of which are frequently wanting; but enough of which are almost always present to characterize the disease: which symptoms, furthermore, may either gradually diminish in severity, and finally disappear, between the twelfth and the thirtieth day of the disease, or may increase in severity and terminate in death between the seventh and the fortieth day from their access: the bodies of patients exhibiting on examination after death, in only a certain proportion of cases, various pathological changes in the brain, heart, lungs, stomach, and liver; but in most cases enlargement or softening, or both, of the spleen; and in all cases thickening or redness, or a morbid deposition in the subcutaneous cellular tissue, or ulceration, or all these changes, of the elliptical plates of the ileum; with enlargement, redness, and softening of the mesenteric glands, corresponding in their position to the altered intestinal follicles: which disease, thus characterized and defined, differs essentially from all others, in its causes, in its symptoms, in its lesions; and is, in the present state of our knowledge, only to a limited extent under the influence or control of art.

being cases of fever. The preliminary observations are to a great extent speculative and hypothetical.

*A Practical Essay on Typhous Fever. By Nathan Smith, M. D.* The author of this modest and unpretending essay was an extensive and distinguished teacher and practitioner of medicine and surgery throughout many portions of the New England States during the first quarter of the present century. He was a remarkable man; and his name stands worthily and fitly by the side of those of Huxham, Pringle, and Blane. My opinion of the value of the essay above mentioned has been already sufficiently attested, by the incorporation into my book of a large portion of its matter. To an American practitioner, it is worth infinitely more than all the modern English treatises on fever put together; for this simple reason, if for no other, that it deals with the form of disease with which he is familiar—which the English treatises do not do. Nathan Smith was a shrewd, clear-headed, patient, and careful student of nature—his vision undazzled and his judgment never perverted by fanciful speculations; and the labor of my book will not be wholly lost if it succeeds in some degree in calling back the attention of my countrymen to his neglected and almost forgotten pages. The essay was published in 1824.

*Anatomical, Pathological, and Therapeutical Researches upon the disease known under the names of Gastro-Enteritis; Putrid, Adynamic, Ataxic, and Typhoid Fever. By P. Ch. A. Louis, 2 vols. Paris*, 1829. This is the great work of Louis, to which reference has been so constantly made throughout the preceding history. An American edition was published from a translation by Henry J. Bowditch, M. D., in 1836. A second French edition was published in 1841. The work at the time of its first appearance was entirely without a parallel, if we except the *Researches on Phthisis*, by the same writer. These works of Louis have become the established models for all similar undertakings; they are the standards by which all analogous labors are to be tried. Here and there, a single individual has attempted to depreciate their value and underrate their importance—a value and an importance which every successive year since their appearance has only served to strengthen and confirm. Like new planets added to a solar system, they have quietly but irresistibly wheeled into their orbits, from which they are henceforth no more to be jostled than the planets are from theirs.

*Leçons de Clinique Médicale, etc. Par A. F. Chomel. Fièvre Typhoide. Paris*, 1834, pp. 548. Next to the great work of Louis, this is perhaps the most valuable original treatise on typhoid fever that has been published. It is not so methodical in its plan and arrangement as it might have been, and the anatomical details are somewhat prolix, extending as they do to nearly two hundred and fifty pages; still, as I have just said, the work is second only to one in value. It is rich in solid material, and is marked throughout by the clearness, good sense, and sound philosophy of its distinguished author.

*A Report, founded on the Cases of Typhoid Fever, or the common Continued Fever of New England, which occurred in the Massachusetts General Hospital, from the opening of that Institution in September*, 1821, *to the end of* 1835. *By James Jackson, M. D.*, pp. 93, 1838. There is no need of my speaking at any length of this Report; the preceding pages bear ample and conclusive evidence of the richness and value of its materials. It consists mostly of a careful and accurate numerical analysis of three hundred and three cases of typhoid fever treated in the Massachusetts General Hospital. It is altogether the most important contribution which has been made to the history of the continued fever of New England, and it is in every way worthy its distinguished author, the elder Louis of the New World.

*Remarks on the Pathology of the Typhoid Fever of New England; as exhibited in its Physical Signs and its Anatomical Appearances. By Enoch Hale, M. D.*, 1839, pp. 68. This paper, like the Report of Dr. Jackson, is published amongst the Communications of the Massachusetts Medical Society. It is a very excellent and sensible paper; and it is particularly valuable for its minute and careful description of some of the more characteristic physical signs of typhoid fever—such as the meteorism, and the rose spots; and of the intestinal lesions; and further, for its full and clear statement of the differences between typhoid and typhus fever.

*Traité de l'Entérite Folliculeuse—Fièvre Typhoide. Par C. P. Forget. Paris*, 1841, pp. 846. This is a work of very large promise, and of very moderate performance. It is a full and systematic monograph of more than eight hundred solid pages, in which the author has contrived neither to give us a compact and clear summary of the researches of others, nor to add any import-

ant knowledge of his own. As Sir James Mackintosh said on another occasion, it is one of the most unnecessary books in the world. One of its leading objects is to vindicate the strictly local and inflammatory nature of typhoid fever, and the consequent rational antiphlogistic treatment.

*On the Identity or Non-identity of Typhoid and Typhus Fevers. By William Jenner, M. D., London*, 1850, pp. 102.

*On the Identity or Non-identity of the Specific Cause of Typhoid, Typhus, and Relapsing Fever. By William Jenner, M. D., London*, 1850, pp. 20.

*Typhus Fever, Typhoid Fever, Relapsing Fever, and Febricula; the diseases commonly confounded under the term Continued Fever. Illustrated by Cases collected at the bedside. By William Jenner, M. D., London Medical Times*, 1850.

I have already alluded to these publications, and expressed my opinion of their value. It is not necessary that I should give any detailed account or analysis of them here. The more important portions of their contents are introduced into the present edition. Dr. Jenner is Professor of Pathological Anatomy in University College, London; his observations were made in the London Fever Hospital; and that these observations were extensive, thorough, careful, conscientious, and complete, no one who reads the record of them will for a moment doubt.

# PART SECOND.

THE

## HISTORY, DIAGNOSIS, AND TREATMENT

OF

# TYPHUS FEVER.

# PART II.

# TYPHUS FEVER.

## CHAPTER I.

### PRELIMINARY MATTERS.

### ARTICLE I.

#### INTRODUCTORY.

I NOW proceed to the description of *Typhus Fever*. The natural history which I shall be able to give of this disease will be somewhat less complete than that which I have already given of typhoid fever. The reason of this is twofold: in the first place, I have seen much less of the disease myself; and in the second place, but few entire and elaborate histories of the disease have been published. We have many excellent general descriptions of it, especially as it has shown itself in certain localities, and during certain epidemic periods; but we have had no thorough and detailed histories of its symptomatology and lesions; like those which Louis, Chomel, and others have furnished us of typhoid fever. To these remarks it may be added that the diagnosis of typhus fever, by most of the observers upon whose records we must depend for our materials, is much less accurate and positive than that of typhoid fever is, as this disease shows itself in New England, and in France. *Typhus fever is more frequently confounded and mixed up with other diseases, by its best historians*, than typhoid fever is; and in this way, another element of incompleteness and confusion is introduced into its history. The foregoing remarks, contained in my second edition, need some qualification in consequence of the recent appearance of the papers of Dr. Jenner.

The materials for the following description will be derived mostly from British physicians, and from Dr. Gerhard of Philadelphia. The accounts of typhus fever which have been published from time to time, and mostly in the form of Hospital Reports, by the Scotch and Irish practitioners, constitute our richest and most authentic sources of information in the study of this disease. This remark is especially applicable to the Hospital Reports of Dublin, made subsequent to the year 1812; by Edward Percival, John O'Brien, F. Baker, William Pickles, John Cheyne, and others. I know nothing of a like character in the English language superior to the Hospital Reports of John Cheyne; and one of the most valuable histories of the disease now under consideration which has ever been published, is to be found in the account given by Dr. Barker, and Dr. Cheyne, of the great epidemic of typhus fever, which overran Ireland during the years 1817, 1818, and 1819. One reason for this reliance, which I am disposed to place upon the observations of Irish and Scotch writers, rests upon the belief, the grounds of which will be fully stated hereafter, that *true typhus fever* is more exclusively the prevailing fever in Ireland, and in the northern portions of the British empire, than it is in the middle and southern regions of England. Dr. Gerhard has published, in the *American Journal of Medical Sciences*, a very valuable history of an epidemic typhus fever which prevailed in Philadelphia, during the spring and summer of 1836, and which was carefully studied by himself and Dr. Pennock. I am aware of the danger of trusting to the phenomena presented by any single epidemic in making up the history of a disease, and I do not intend in the present instance to be guilty of this fault. I look upon the papers published by Dr. Gerhard, as of inestimable value; but it is only by a careful examination of many histories of typhus fever, and by a methodical arrangement of the materials which they may furnish, that I can hope to make out even a tolerably complete and satisfactory description of the disease.

I shall follow, as far as this can conveniently be done, the same general plan, in the disposition of the several subjects of inquiry and description, as has already been adopted in the foregoing history of typhoid fever.

## ARTICLE II.

### NAMES OF THE DISEASE.

The term *typhus*, from the loose manner in which it has been used, and the various morbid conditions to which it has been applied, has become somewhat indefinite in its signification. It is only important for me to say here, that I mean by it an idiopathic, contagious fever, prevailing generally amongst crowded populations, and in badly ventilated localities, and not marked by any constant lesion of the solids. The other most common names by which it has been known are the following, to wit: *Hospital Fever; Jail Fever; Camp Fever; Malignant Fever; Putrid Fever; Petechial Fever;* and *Contagious Typhus.* It should be added that these latter terms have not been invariably and exclusively confined to true typhus; they have been sometimes applied to typhoid fever.

# CHAPTER II.

## SYMPTOMS.

### ARTICLE I.

#### MODE OF ACCESS.

TYPHUS fever is sometimes sudden and sometimes gradual in its access. I am unable to state, with any degree of certainty, the proportion between these classes of cases. In six of eight cases, reported by Dr. Gerhard, the patients complained, for a period of from three to seven or eight days, of various uncomfortable feelings; such as languor, loss of appetite, soreness of the muscles, sleeplessness, wandering pains in different parts of the body, and so on. In the other two cases, the disease came on suddenly. Dr. O'Brien says that these premonitory symptoms continue generally for a few days, but sometimes for a week or two. Amongst these symptoms, he enumerates lassitude and fatigue on the least exertion; dulness of the eyes; sallowness, and dejected expression of the face; heavy, dull pain in the head; slight nausea; anxiety, without any apparent cause; slight chills, frequently repeated, especially towards night, and imperfect disturbed sleep.[1] Dr. Pickels speaks of the disease as being nearly always preceded by trembling and nausea.[2] Dr. John Cheyne, in his description of the fever of the spring and summer of 1818, as it showed itself at the Hardwicke Hospital, Dublin, says: "Some patients felt an unaccountable dejection of spirits, for several days before seizure; some continued at work or labor for several days after their illness began in the shape of a headache, which frequently intermitted; in a few, the disease

[1] Trans. of Phys. of Ireland, vol. i. p. 410. [2] Ibid., vol. iii. p. 196.

began with intense headache without rigor; the patients being, as they said, at once knocked down."[1]

Dr. Jenner says: "Of sixteen of forty-three fatal cases, no particulars as to whether the disease began suddenly or insidiously could be obtained. Of the remaining twenty-seven cases, twenty-three were taken ill suddenly; nineteen of these twenty-three cases first kept their beds as follows:—

Four on the first, six on the second, five on the third, three on the fourth, and one on the sixth day.

Thus, all these patients were confined to their beds before the seventh day. Of these twenty-three cases, when four took to their bed was not learned. In four of the twenty-seven cases of which a correct history was obtained from the patients or their friends, the disease began insidiously, so that the day of its commencement could not be exactly ascertained, but they took to their beds on about the second, third, fourth, and sixth days; so that, if this group be added to the first, every patient may be said to have been confined to bed by the sixth day.[2]

Many writers, who have seen much of the disease, mention cases in which persons in full health, while standing by the bed of the sick and breathing the infected atmosphere from the body and bed of the patient, have been instantaneously seized with nausea, giddiness, faintness, and so on, and these symptoms have been immediately followed by the gravest form of the fever. These sudden seizures are more common in typhus than they are in typhoid fever; indeed, I do not know that they are ever seen in the latter disease.

## ARTICLE II.

### FEBRILE SYMPTOMS.

Sec. I.—*Chills.* I do not know that there is anything peculiar, or characteristic, in the initiatory chill of typhus. Many writers speak of it very indefinitely, or not at all. Sometimes it is of some severity, and well marked; but in many cases it seems to consist merely of a sense of chilliness felt over the whole

[1] Dub. Hosp. Rep., vol. ii. p. 4.

[2] Dr. Jenner on Typhoid and Typhus Fever, p. 8.

body, or especially perhaps along the back, and continuing not unfrequently for two or three days.

Sec. II.—*Heat and State of the Skin.* After the disease is fully formed, the surface of the body becomes preternaturally hot. The heat of the skin is peculiar and pungent, constituting what has been called "*calor mordicans.*" Dr. Gerhard says, that this burning heat of the skin was so remarkable, in the Philadelphia epidemic of 1836, that the resident physicians and others could frequently diagnosticate the disease from this symptom alone. This morbid heat is generally accompanied by dryness of the skin. It is increased towards night, forming a well-marked evening exacerbation. Dr. Edward Percival observes that the strongly marked exacerbation occurs more frequently in the first than in the second or third week of fever. During the spring and summer of 1817, the temperature of the surface, on the day of admission to the Hardwicke Fever Hospital, Dublin, was ascertained by the thermometer in two hundred and fifty cases. It ranged from 96 to 100 deg. Fah. inclusive, in eighty-three cases; from 101 to 106 deg. Fah. inclusive, in one hundred and sixty-three cases; and from 107 to 109 deg. Fah. inclusive, in four cases.[1] During the winter and spring of 1818, a similar examination was made of ninety-nine cases, with similar results. The temperature ranged from 95 to 100 deg. Fah. inclusive, in twelve cases; and from 101 to 106 deg. Fah. inclusive, in seventy cases; and from 107 to 109 deg. Fah., in seventeen cases. Towards the termination of the disease, the skin not only loses this acrid and burning heat, but frequently becomes cooler than natural. Sir Gilbert Blane, in his excellent description of typhus, studied mostly on shipboard, says: "The symptom next to be taken notice of, though a minute one, is very constant and characteristic in this sort of fever. It is a peculiar heat in the skin, communicated to the hand of another person. It is usual to grasp the wrist of the patient after feeling his pulse, in order to examine the state of the skin in point of heat and moisture; and in doing this a glow of heat is impressed on the palm of the hand, which lasts for some hours, if one should neglect so long to wash the hands."[2] In connection with the same subject, a still

[1] Dub. Hos. Rep., vol. ii. p. 10. [2] Obs. Dis. of Seamen, p. 355.

older and equally careful observer, Sir John Pringle, remarks: "In the beginning, the heat is moderate; even in the advanced state, on first touching the skin, it seems inconsiderable; but upon feeling the pulse for some time, I have been sensible of an uncommon ardor, leaving an unpleasant sensation on my fingers for a few minutes after. The first time I observed this, I referred it to the force of imagination; but I was assured of the reality by repeated experiments, and by the testimony of others, who, without knowing of my observation, had made the same remark."[1]

Most writers upon this disease speak of the odor from the body of the patient. Southward Smith calls it *peculiar* and *characteristic*, but does not attempt to describe it. John Cheyne mentions the offensive fetor from the patient. Dr. Gerhard is more explicit upon this point. He says that this peculiar odor was pungent, ammoniacal, and offensive; especially in severe cases, and in fat, plethoric individuals; sometimes, for a few days before death, the smell resembled that of putrid animal matter. The bodies of these patients ran into decomposition very rapidly after death, although, before putrefaction, the odor was less pungent than it was during life. Dr. Pickles says that, upon entering the room of a patient, the presence of typhus fever was indicated, previous to any examination, by this peculiar fetor from the skin.

Sec. III.—*Pulse.* The pulse is generally very frequent. In severe and fatal cases, it is often more than one hundred and twenty in the minute, and not unusually as high as one hundred and fifty. Of two hundred and thirty-seven cases, in the Hardwicke Fever Hospital, the average frequency of the pulse, on the day of admission, was from fifty-two to seventy-eight in twenty-seven; from eighty to one hundred in seventy-nine; from one hundred and two to one hundred and twenty in ninety-five; and from one hundred and twenty-four to one hundred and eighty in thirty-six.[2] The rapidity of the circulation was generally, but not uniformly, proportionate to the excess of temperature. Sometimes, though rarely, the frequency of the pulse, even in very grave cases, is below the natural standard. It is generally,

[1] Obs. Dis. of Army, p. 259.
[2] Dub. Hosp. Rep., vol. ii. p. 4.

but not always regular. Dr. Gerhard says that the peculiar undulation in the motion of the artery, so frequent in typhoid fever, was rarely felt in the Philadelphia typhus of 1836.

The pulse very rarely, if ever, exhibits the strength, hardness, and sharpness of inflammatory diseases. Sometimes, early in the fever, it may be somewhat full, but even then it is easily compressed; and after the first few days it is almost always small, soft, and feeble.

Dr. Jenner says, in speaking of his fatal cases: "From the earliest period of the disease that any of the forty-three patients came under my observation, the pulse was decidedly soft, gradually became weak, then very weak, and in many cases during the last few days of life imperceptible. Generally small, it was occasionally full, but still retained its extreme softness."[1]

In this connection, better than anywhere else, I may speak of the feeble action of the heart. This feebleness in the contraction of the central organ of the circulation is particularly mentioned by Dr. Stokes of Dublin, and other writers on typhus fever. Dr. Gerhard found it extreme in many cases, even from the earliest period of the disease.

## ARTICLE III.

### THORACIC SYMPTOMS.

In most cases of typhus, there is some lesion of the respiratory organs, manifesting itself by signs or symptoms during life. Dr. Gerhard found, early in the disease, a feeble and imperfect respiratory murmur over the posterior portion of the chest, with corresponding dulness on percussion. These signs were frequently but not always combined with a subcrepitant or mucous rhonchus. This latter was more common during the cold than during the warm weather. The sibilant rhonchus, common in typhoid fever, was rare in this epidemic. Pneumonia constituted the most frequent accidental complication, especially in the winter. It was indicated by a loose mucous rhonchus, instead of the fine dry crepitus and bronchial respiration of simple pneumonia, and was unattended by pain.

[1] Dr. Jenner on Typhoid and Typhus Fever, p. 37.

Dr. Pickels says that, in the typhus fever of 1817, 1818, and 1819, in Cork, next to the affection of the head, the most prominent and constant feature was the affection of the chest, as marked, during the first days, by oppression of the precordia, sighing, and in the course of the disease by cough. The cough was generally accompanied by a copious and viscid expectoration, and was especially urgent early in the disease during the winter months.[1]

The frequency of respiration, during the active period of the disease, is increased. Of one hundred and seventy-one cases admitted into the Hardwicke Fever Hospital, during the spring and summer of 1817, the average frequency of the respiration on the day of admission was about thirty in the minute. It ranged from twenty to thirty in eighty-four cases; from thirty-two to forty in seventy-seven cases; and from forty-four to sixty in ten cases.[2]

Of two hundred patients, treated by Dr. Henderson at the Edinburgh Royal Infirmary, in 1838 and 1839, there were symptoms of thoracic disease in seventy-three. In a large majority of these cases, the symptoms were bronchitic.[3]

Of Dr. Jenner's forty-three fatal cases, there was cough, generally slight in amount, and accompanied by little expectoration in twenty-one. "Sonorous rale was present in seven of these cases; three had mucous rale more or less abundant, without sonorous; and in nine there was during life some want of resonance of the most depending part of the chest, i. e., the portion corresponding to the most depending portion of the lung, the patient being in the recumbent position, and on his back; this region does not, it will be observed, include the extreme base, the root or apex of the inferior lobe; the respiratory murmur at the same point was accompanied by an intensely congested condition of the corresponding pulmonary tissue, occasionally passing into absolute consolidation. Doubtless the same physical signs were present in many other cases, but from the state of the patients very many were unable to be raised in bed sufficiently for the posterior parts of their chest to be examined."[4]

[1] Trans. of Phys. of Ireland, vol. iii. p. 198.
[2] Dub. Hosp. Rep., vol. ii. p. 11.
[3] Edin. Med. and Surg. Journal, Oct. 1839.
[4] Dr. Jenner on Typhoid and Typhus Fever, p. 37.

## ARTICLE IV.

### CEREBRO-SPINAL, OR NERVOUS, SYMPTOMS.

Amongst the most constant and prominent symptoms of typhus fever, are those connected with the nervous apparatus. They obtrude themselves urgently upon our observation; they are striking, and strongly marked in their character; they are many in number; *they are present at the earliest period of the disease;* and they accompany its various stages up to the time of convalescence. Notwithstanding all this, for the very reason, perhaps, that it is so, I am unable to give anything like so full and discriminating a history of this extensive and important class of symptoms, as I have given of the corresponding symptoms, in typhoid fever. The British writers upon typhus fever do not seem to have considered it at all necessary to speak with any considerable degree of particularity of these symptoms; so that it is impossible, in the actual state of our knowledge, to make so satisfactory a comparison in this respect between typhus and other fevers, as is desirable.

Sec. I.—*Headache; Pains in the Back and Limbs.* Pain in the head is almost always present during the early period of typhus fever. Dr. Gerhard does not speak of it in his general description, but it is mentioned in all his reported cases, eight in number. It is very commonly amongst the premonitory symptoms of the disease; and if not present at this time, is very sure to constitute one of the signs of its formal and more decided attack. Dr. Henderson found it in one hundred and fifty of one hundred and fifty-nine cases; it was present on the first day, in ninety-two of one hundred and eight cases; and its mean duration was ten days.[1] Dr. Pickels says of the Cork epidemic, in 1817, 1818, and 1819: "The most distressing source of uneasiness was the headache; the patient, when questioned, complaining, in almost every instance, particularly of this pain, and often using some comparison illustrative of its acuteness. It was commonly referred to the forehead, more particularly over the eyes; rarely to the occiput. In a few instances it was dull and verti-

[1] Edin. Med. and Surg. Journ., vol. lii. p. 432.

ginous." Dr. Stewart informs us that, of one hundred and thirty-nine cases occurring at Glasgow, the headache was present after the fifth day in ninety-eight; that in between one-sixth and one-seventh of this number it ceased before the tenth day; but that in the remaining five-sixths it continued throughout the advanced stages of the disease, and in eleven throughout the whole course of the affection.[1] The headache is usually accompanied by pains, more or less constant and severe, in the back, and in the extremities, particularly the legs.

Sec. II.—*State of the Mind.*—The mind is almost always more or less affected, from the commencement of the disease. This affection may consist, for the first few days, merely in a diminution of its usual strength and activity. The patient feels himself confused and cloudy, and hesitating in his thoughts. His accustomed aptitude for intellectual effort is lost. Dr. Gerhard says that, in the Philadelphia epidemic of 1836, "the alteration of the intelligence was so slight at first as to escape the attention of an inexperienced observer; but when the fever had fully set in, there was at least confusion of the intellect, and nearly always delirium. This last symptom was absent in only a few cases. The delirium was not noisy, except in about one patient out of twenty. In the immense majority of patients, it was dull, muttering, and incoherent. The delirium became more tranquil, and was exchanged for ordinary stupor, or coma, when the fever was at its height. It did not cease entirely until the complete establishment of convalescence. Even after recovery, the intellect of the patient was more enfeebled than it is in ordinary diseases, and regained its usual strength but slowly."

In the Irish epidemic at Cork, already spoken of, Dr. Pickels says: "The patient commonly raved of those objects which had principally engrossed his attention during health. A cow-herd, who had been brought in from the country, fancying that the patients who lay around him were those animals which he had been accustomed to attend, endeavored at intervals to rouse them into motion by a particular cry, which is usual for this purpose in the country. A thief raved of his thefts and accomplices. A faithful steward refused, with many acknowledgments, to take

[1] Edinburgh Med. and Surg. Journ., Oct. 1840.

his wine, as he had his master's keys, and it might render him unfit to perform his business." Hildenbrand says: "During the septenary stage of an attack of typhus, my mind was constantly engaged in removing an awkward ornament from my stove, which stood directly opposite to me; and, being of course unable to remove it, it tormented me in the most cruel manner. One of my pupils, who, having been taken with an attack of typhus a short time previously, had assisted at the opera called the Mirror of Arcadia, performed, during the whole septenary of the nervous stage, the character of viper-catcher; and as he was obliged to swallow these disgusting reptiles, he experienced the most inexpressible anxiety. Another labored under the painful and fantastic idea, during the whole course of his disease, that he was not only suffering for himself, but for all his comrades in the clinical ward."[1] Dr. John Cheyne informs us, in his account of typhus fever at the Hardwicke Hospital, Dublin, in the summer of 1818, that, in severe cases, delirium came on at the end of the first or at the beginning of the second week. "At all times, such patients were incapable of any stretch of attention; they answered questions satisfactorily, though with a faltering voice, but soon wandered from the subject. In many cases, the delirium was of a very troublesome kind; first, it was only occasional; then, it continued all night; then it was uninterrupted. We had many patients who created great disturbance by wandering about the wards all night, prying into the closets, and looking under the beds. Some of these were full of their usual occupations: one man, by trade a cooper, endeavored to pull his bed to pieces, in order to make a tub of the spars." It ought, perhaps, to be stated here, that many of the patients in the Irish hospitals were habitual spirit drinkers; and it is very probable that, in some of these cases, the elements of delirium tremens may have been combined to some extent with those of the fever itself.

In twenty-three cases amongst females, noticed by Dr. Henderson, at Edinburgh, the delirium began on an average about the eleventh day. Dr. Henderson found no appreciable relation between the disturbance of the mental powers and the degree of pain in the head. The average date at which delirium showed itself amongst male patients was about the tenth day: it oc-

[1] Gross's Hildenbrand, p. 45.

curred, also, in a greater proportion of cases amongst males, and was oftener of a violent character.

The following is Dr. Jenner's account of the state of the mind in his forty-three fatal cases: "The mind of one patient was perfect throughout the disease. This was a very mild case in every particular; the patient died of phlebitis after he had once left his bed. In another case there was only slight mental confusion; this patient also survived the fever. Although there was no actual delirium in thirteen other cases, yet there was in them such extreme mental confusion that the patients could give no account of their past state, 'felt bothered,' had no idea how long they had been in the hospital, nor in some cases where they were. Delirium began in ten cases respectively, on the fifth, eighth, tenth, tenth, tenth, eleventh, eleventh, eleventh, twelfth, and thirteenth day. It was present when five cases first came under observation, severally on the sixth, eighth, ninth, ninth, and fourteenth day. In every instance in which the delirium commenced after the patients entered the hospital, excepting one, it was preceded by a varying amount of mental confusion. It was uncertain how long nine patients had been ill, who were delirious when I first saw them. Four patients were admitted into the wards in a state of complete stupor. The delirium continued till the death of the patients in thirteen cases, nine of which proved fatal, severally on the ninth, eleventh, eleventh, fourteenth, sixteenth, seventeenth, seventeenth, nineteenth, and twentieth day. The remainder of the forty-three patients either sunk into a state of absolute coma, or survived the termination of the fever. The character of the delirium was usually far less active than that of the delirium of typhoid fever; the patients displayed less vivacity, and fewer of them, seven only of the twenty-four, i. e. at the rate of 29.2 per cent. of those who were delirious after they were admitted into the hospital, attempted to leave their beds to roam in the wards."[1]

Another very constant symptom belonging to this group consists of somnolence, or stupor, in its various degrees. This is amongst the earliest phenomena of typhus fever. Dr. Gerhard says: "It was perceptible in our patients, from the moment when they complained of their first symptoms. It was frequently slight,

[1] Jenner on Typhoid, &c., p. 23.

SEC. IV.—*State of the Senses.* Several of the senses are commonly more or less perverted in the course of typhus fever. Some confusion of vision is frequently present, from the beginning of the disease. This is often associated with dizziness, especially on assuming the sitting or upright position. Dulness of hearing, commonly connected with ringing in the ears, is also an early and a very common symptom. Dizziness was present in five of nine cases, observed at London by Dr. Shattuck, Jr., and dulness of hearing in only one. Dr. Stewart mentions great intolerance of light, as one of the most constant symptoms of the disease.

There is often a morbid sensibility of the entire surface of the body. Dr. Gerhard observed, in the Philadelphia epidemic of 1836, that "the sensibility of the skin was universally augmented when the stupor was not so great as to render the patient insensible, or nearly so, to all external impressions. The tenderness upon pressure was so much increased as to induce us to refer the external soreness at the epigastrium, when pressure was made upon the abdomen, to an affection of the internal organs; but on more careful examination, the sensibility was nearly equally increased in every part of the body, and was evidently external.

"The cutaneous tenderness was preceded by muscular soreness, which lessened as the skin became more sensitive."

SEC. V.—*State of the Muscles.* Amongst the earliest and most constant accompaniments of typhus fever, is loss of muscular strength. This is almost invariably present from the beginning to the close of the disease. Even during the premonitory stage, when this exists, it is with much difficulty and effort that the patient succeeds in keeping from his bed. Dr. Pickels, in his Report on the Typhus Fever at Cork, says: "The debility was such that the patient was unable, from the commencement, to rise from the bed, or to walk without assistance, and in some instances, even without the effort of rising, fainted in bed. In a few, syncope appeared, as the first symptom of the onset of the disease." In thirty-four of Dr. Jenner's forty-three fatal cases, there was extreme prostration; and in a large majority of these cases, this extreme prostration came on from 9th to the 12th day of the disease.[1]

[1] Jenner, &c. p. 27.

"There is a secondary and still more extreme prostration of strength, which comes on on the subsidence of the fever, and is attended with coldness of the extremities, and a feeble, fluttering pulse."[1]

Spasmodic twitchings of the muscles are very common in typhus as they are in typhoid fever. Their positive frequency, I am not able to give. Dr. Gerhard observed subsultus of the tendons at the wrist in three-fourths of his patients. "In the more severe cases," he says, "the subsultus extended to the muscles of the legs and face. When it appeared at the face, the corners of the mouth were drawn rapidly to one side or the other, giving a singular expression to the countenance. In the worst cases, the subsultus extended to nearly all the muscles of the body, keeping the patient in a constant state of tremor, not unlike a severe chill. The smaller muscles were much more affected than the larger ones, and there was no constant rigidity observed in any case; neither was there any paralysis." It will be seen, from what has now been said, that the symptoms connected with the nervous system are even more constant and more strongly marked in typhus than in typhoid fever; but that there is no very constant or important difference between them, unless it be in the greater degree of stupor attending the former, in the lower grade of the delirium, and in the earlier and more rapid development of these symptoms.

## ARTICLE V.

### DIGESTIVE AND ABDOMINAL SYMPTOMS.

SEC. I.—*Tongue and Mouth.* The appearance of the tongue in this disease is very various. In mild cases, it frequently continues moist, and is merely covered with a light-colored, thin coating; this may become brownish, as the disease proceeds. In other and in grave cases, the tongue is dry, cracked, glazed, trembling when protruded from the mouth, and of various shades of color, from the light brown already mentioned to black. It may be of a deep glossy red color. Sometimes, and in certain stages of the disease, it has a dark, yellowish or brown, dry stripe along its middle, while the edges are nearly clean and

[1] Amer. Journ. Med. Sciences, Aug. 1837.

moist. Dr. Henderson studied the state of the tongue very carefully in a large number of cases at Edinburgh, in 1838 and 1839. "It very early became covered," he says, "with an increased and altered secretion; white, yellow, or ash-colored; viscid, and adhering to the surface, becoming commonly thicker and darker as the disease advanced. A dry state of the tongue began chiefly in the second week of the fever, and continued for the most part without change until, along with other symptoms of convalescence, the tip and edges assumed a moist and clean appearance, which gradually extended to the rest. The dryness was often confined to the centre of the tongue, extending in a brown streak from the point backwards."[1] Accompanying these morbid states of the tongue, there is very frequently an accumulation of dark sordes upon the teeth and gums, and fetor of the breath. Dr. John Cheyne, in his Hardwicke Hospital Report, for 1818, says, that there was often an inability to protrude the tongue, which very awkwardly obeyed the will of the patient. "He would open his mouth, and after various unsteady motions, at length force out his tongue; and when this was accomplished, it was not again drawn within the mouth until he was repeatedly admonished to that effect." Dr. Jenner says the tongue is more uniformly dry and brown in typhus than it is in typhoid fever.[2]

SEC. II.—*Appetite.* The appetite is generally destroyed, although it would seem to be less constantly and entirely wanting in typhus than in typhoid fever. Amongst the blacks at Philadelphia, in 1836, the appetite sometimes continued, and some of them asked for and ate solid food. At the Cork Street Fever Hospital, during the summer of 1816, when the prevailing character of the fever was very mild, Dr. William Stoker noticed, as a remarkable peculiarity, the continuance of a considerable degree of appetite, even whilst the fever was urgent. In two fatal cases, a desire for food was expressed a few hours before dissolution.

SEC. III.—*Nausea and Vomiting.* Nausea and vomiting are occasionally present at the commencement of the disease; but the proportion of cases in which they occur, and the difference in this respect, if any such exist, between typhus and typhoid

[1] Edin. Med. and Surg. Journal, Oct. 1839. [2] Jenner, &c. p. 29.

fever, I have no means of ascertaining. In the Philadelphia epidemic of 1836, both nausea and vomiting were extremely rare. Dr. Gerhard says that he scarcely found either of these symptoms noted in a single case. There may be a good deal of difference in their frequency, in different seasons and localities. I have already stated, that Dr. Pickels says the fever at Cork, in 1817, 1818, and 1819, was, in almost every instance, preceded by nausea, or, as the patient expressed it, by an empty straining.

Dr. Anderson says that nausea was present in fourteen of eighteen cases observed by himself, on the first day of the disease. In nine cases observed by Dr. Shattuck, at the London Fever Hospital, there was neither nausea, vomiting, nor epigastric pain. Amongst one hundred and thirty-two female patients treated at the Royal Infirmary of Edinburgh, in 1838 and 1839, nausea and vomiting were ascertained to have been present in only twelve, chiefly at the beginning of the fever.

Sec. IV.—*State of the Bowels.* In a majority of cases, there is very little if any obvious change either in the shape or feel of the abdomen. When it is all tympanitic, it is only slightly so. Dr. Gerhard says that, in many patients, it was either retracted or altogether of the natural form. Dr. Stewart found moderate meteorism in only seventy-four of four hundred and sixty-three cases. Tenderness on pressure, either over the whole abdomen or over the epigastrium, is frequently spoken of by writers on typhus fever; but it is probable that, in many cases, this has depended upon the morbid sensibility of the skin. Of Dr. Shattuck's nine cases, there was meteorism in only one; and in this, but for a single day. Of Dr. Jenner's forty-three cases, there was tenderness of the abdomen at some period of the disease in nine cases, but in eight of them it was trivial and transient. Gurgling was detected in only a single case. The abdomen in twelve of forty-one cases was full and resonant, in three only of these twelve was it unnaturally distended, and in neither of the three was it noted to possess the peculiar shape of the typhoid abdomen. In twenty-two cases there was neither fulness, resonance, tenderness, nor gurgling; in these twenty-two cases the abdomen presented all the physical signs of health, and in two of them it was noted to be somewhat concave.[1]

[1] Jenner, &c. p. 31

attentively, and was remarkable merely for its extraordinary freedom from brick-red deposit, or the changes so frequently observed during the course of fever." Dr. Edward Percival says that the quality of the urine is too variable to place any dependence upon it. This, however, is in reference to prognosis. Dr. William Stoker says that, in the early stages of the disease, the urine is scanty and high-colored. Retention of the urine is not uncommon in bad cases, constituting a distressing, and, if overlooked, as it is very likely to be, a dangerous complication.

This seems to be more common in typhus than in typhoid fever. It was present in eleven of Dr. Jenner's forty-three fatal cases. "Either retention or involuntary discharge of urine was a symptom in twenty-one, or in nearly one-half of the patients; and as no notes on the point were taken in seven cases in which the prostration was extreme, it is probable that considerably more than one-half were thus affected."[1]

SEC. III.—*Epistaxis.* Hemorrhage from the nostrils, so common in typhoid, seems to be not a very frequent occurrence in typhus fever. Dr. Gerhard does not mention it at all. By some writers, however, it is spoken of as a more common and important symptom. Dr. Pickels, in his report on the Cork epidemic, says: "Bleeding from the nose, though often occurring separately, in a majority of instances appeared in petechial cases. The discharge did not usually exceed a few drops, but continued to recur during some days. In two cases, however, which proved fatal, the discharge was so profuse as to fill vessels of considerable size. Bleeding from the nose came on in a majority on the second day, rarely appearing later than the seventh; it was much more common amongst males than females." Dr. F. Barker speaks of its occurrence *occasionally*, and adds that no other hemorrhage is common. It was not present in any of Dr. Jenner's cases.

SEC. IV.—*Cutaneous Eruptions.* Typhus fever is very generally attended with a peculiar and characteristic eruption upon the skin. The name of the disease has often been derived from

[1] Jenner on Typhoid, &c. p. 26.

this circumstance; hence it has been called *petechial* fever, *spotted* fever, *maculated* fever, and so on. As to the exact frequency of the occurrence of this eruption, it is impossible to speak with entire certainty. In many cases it has probably been overlooked; and besides this, it is to be remembered that the diagnosis of typhus fever, by many who have written most extensively and most magisterially upon the subject, has been anything but rigorous and careful. Dr. Stewart remarks, "that the eruption of typhus was unnoticed at Edinburgh, until the attention of physicians was called to it by Dr. Peebles in 1832." He says further: "It is also well known to many that, previous to a visit which Dr. Peebles made to the Glasgow Fever Hospital in the spring of 1835, the exanthema of typhus, then found to be of general occurrence, had neither been looked for nor registered in that institution, and was received as a new discovery." These considerations may help to account for the differences which are to be found in different histories of the disease in relation to this particular subject. In the Philadelphia epidemic, Dr. Gerhard says: "It was present in thirty-two of thirty-six whites. Of the four cases in which it was not visible, one died upon the seventh day of the disease, and the others presented slight symptoms of fever, which disappeared in the course of four or five days. It was also visible, though less distinctly, in mulattoes; and we may infer that the color of the skin alone prevented its development in the negroes."

This eruption differs in many respects, and in a very striking degree, from that of typhoid fever. Its color, especially after the second or third day of its appearance, is that of a duller and darker red. The spots are of a dun, dusky, purplish hue; in some cases they become almost black. They vary in size, from that of a minute point to a diameter of a line, or even of an eighth of an inch. They are less regularly circular or oval than the rose spots of typhoid fever. They are not elevated above the surrounding skin, and disappear but very partially, or not at all, on pressure. They are almost always much more numerous than the spots of typhoid fever; covering in many cases the entire trunk and the extremities. Sometimes, they are spread over the skin almost as thickly as the eruption of measles. Dr. Pickles says that, in the Cork epidemic, "the spots were principally observed upon the breast, neck, shoulders, arms, and thighs;

rarely upon the face. From their resemblance in some instances to freckles, the friends of the patients, in their descriptions at the dispensary, sometimes compared the appearance of the skin covered with them to that of a turkey's egg. The mottled or marbled efflorescence, resembling measles, occurred in several."[1] Huxham says: "We frequently meet with an efflorescence, also, like the measles, in malignant fevers, but of a more dull and lurid hue, in which the skin, especially on the breast, appears as it were marbled or variegated." Pringle's description of the eruption is in these words: "There are certain spots, which are the frequent but not inseparable attendants of the fever in its worst state. These are less usual on the first breaking out in the hospitals; but when the air becomes more corrupted the spots are common. They are of the petechial kind, of an obscure red color, paler than the measles, not raised above the skin, of no regular shape, but confluent. The nearer these spots approach to a purple color, the more ominous they are, though not absolutely mortal." The eruption sometimes fades suddenly, or changes in its color. Dr. Stewart, amongst others, has, within a few years, studied with great care and particularity the character and appearances of this eruption. He says that the rash is permanent; that is, that it does not consist of successive eruptions of spots; that, in all cases, it presents the two periods, longer or shorter, of increase and decline; and that, in the more severe cases, it may exhibit during the period of increase four different states, being *florid*, *dark*, *livid*, and *petechial*. When the hue of the eruption is florid, it disappears readily under pressure; when dark, it still disappears, but more slowly; when livid, semi-petechial, or pseudo-petechial, as it has been called, it is only partially effaced; and when petechial, it is not in the least affected by pressure. In many cases, it remains florid throughout; in others, it presents one or more, and in not a few all these alterations; and after it has reached its height the process is inverted, and it passes through the various phases of lividity, darkness, redness, and paleness, before its evanescence." Of one hundred and thirty-nine cases of typhus observed by Dr. Stewart, the eruption was pale in about one-fourth, florid in between one-sixth and one-seventh, darkish in between one-eighth and one-ninth,

[1] Trans. of Phys. of Ireland, vol. iii. p. 199.

livid in rather less than one-ninth, and petechial in about one-eighth.

Dr. Stewart ascertained the exact time of the appearance of the eruption in fifty-two cases. This time varied from the second to the thirteenth day; but in twenty-nine cases, more than half of the entire number, it appeared on the fifth or sixth day; and in three-fourths it appeared from the fourth to the seventh day. In forty-eight cases the eruption began to decline at different periods, from the eighth to the nineteenth day. It was still more irregular in the time of its disappearance, since this ranged from the thirteenth to the thirty-first day. The average duration of the eruption was eleven and a half days.[1]

Dr. Henderson, of Edinburgh, has also observed, with an attention and thoroughness not inferior to those of Dr. Stewart, the appearances of the cutaneous eruption, and very generally with similar results. Dr. Henderson noticed that, as a general rule, the progress and development of the eruption corresponded with the increasing severity of the other symptoms of the disease; and that, in like manner, the decline of the eruption was nearly simultaneous with the first signs of convalescence. He found, also, that the mortality and duration of the disease were very noticeably proportionate to the abundance of the eruption. Convalescence was more protracted in those cases where it was abundant than in those where it was scanty.[2]

In Dr. Gerhard's cases, the eruption appeared from the sixth to the eighth day after the commencement of the disease, and gradually faded away and disappeared, from the fourteenth to the twentieth.

The importance of this eruption, as one of the diagnostic marks of typhus, induces me to add to the foregoing the minute and precise description of Dr. Jenner. He calls it the *mulberry rash* peculiar to typhus fever. "The eruption was never papular. Its characters varied with its duration. On the first appearance of the rash, it consisted of very slightly elevated spots of a dusky pink color. Each spot was flattened on the surface, irregular in outline, had no well-defined margin, but faded insensibly into the hue of the surrounding skin, disappeared completely on pressure, and varied in size from a point to three or four lines in diameter.

[1] Edinburgh Med. and Surg. Journal, Oct. 1840. [2] Ibid., Oct. 1839.

The largest spots appeared to be formed by the coalescence of two or more smaller, and the shape of the former accordingly was more irregular than that of the latter.

"*Second Stage.*—In one, two, or three days, these spots underwent a marked change; they were no longer elevated above the surrounding cuticle, their hue was darker and more dingy than on their first appearance, their margins rather more, but still imperfectly defined, and now they only faded on pressure. In this stage they were usually darker, less affected by pressure, and their margins more defined on the posterior than on the anterior surface of the body. In some cases the spots after this grew paler, passed into faintly-marked reddish-brown stains, and then disappeared.

"*Third Stage.*—In others, a third stage was reached; the centres of the spots became dark purple, and remained unaltered by pressure, although their circumferences still faded; or the entire spots, the circumferences as well as the centres, changed into true petechiæ, i. e. spots presenting the following characters: a dusky crimson or purple color, quite unaffected by pressure, a well-defined margin, and total want of elevation above the level of the cuticle. This alteration was most frequently observed to take place on the back, at the bend of the elbow, and in the groin. At the bend of the elbow they were generally oval, their long axis lying in the direction of the long axis of the arm. In a large majority of the cases the spots were very numerous, close together, sometimes almost covering the skin. In a few instances, however, they were comparatively few in number, very pale, and situated at some distance from each other.[1] The usual situation of the spots was the trunk and extremities, but occasionally they were limited to the trunk, and now and then were observed on the face. Their number reached its maximum on the first, second, or third day, no fresh spots appearing after the latter date, and

[1] In these cases, on the first day of their appearance, they occasionally bore so close a resemblance to the rose spots, that, although they were never altogether identical with the best-marked specimens of the latter, yet the most tutored eye might be in some doubt as to which order they belonged; and when the general symptoms were at the same time equivocal, the diagnosis was impossible till a day or two had elapsed, when some or all the spots passed into their second stage; whereas, if they had been the spots peculiar to the typhoid fever, they would have retained the characters they presented on the first day till they disappeared altogether on the third or fourth day after their eruption.

each spot remained visible from its first eruption till the whole rash vanished.

"When very numerous, the whole of the spots seen together on the surface had not an equal depth of color; many were much paler than the others, and had a dull appearance, as if seen through the cuticle. In my notes, I have been in the habit of distinguishing these collectively as the subcuticular rash. It often, by its abundance, gave a mottled aspect to the skin, on which ground the darker spots were seated. Variations in the absolute or relative amount of the subcuticular rash and of the spots, as well as in the depth of their respective color, cause much difference in the general appearance of the rash. Sometimes it resembles measles so closely as to be distinguished from it with difficulty; at others, it presents that appearance which has been called spotted rash; and again, it is sometimes so pale that, unless carefully looked for, it might be passed over altogether. When the spots on the back were of a much deeper hue than those on the anterior surface of the trunk, the skin covering the posterior surface was generally considerably congested. Slight pressure of the finger leaving a white mark, which slowly returned to its previous dusky red color.

"To sum up:—

"1. The mulberry rash was present in all the cases.

"2. The rash usually appeared from the fifth to the eighth day of the disease.

"3. Fresh spots never appeared after the second or third days of the eruption.

"4. The duration of each spot was from its first appearance till the death or recovery of the patient from the attack of typhus.

"5. The rash disappeared between the fourteenth and twenty-first days of the disease; when death ensued after the latter date it was the result of local disease, which either complicated the progress of the fever, and continued after that had run its course, or sprung up anew, connected or not with the enfeebled state of constitution, the consequence of the fever.

"6. In no case was there any return of the eruption, and, therefore, no true relapse."[1]

[1] Jenner, &c. pp. 14–17.

Other eruptions, but none of them at all constant or characteristic, are occasionally observed in this disease. Amongst them is that of sudamina, which is sometimes seen, but not so frequently as in typhoid fever. A miliary eruption now and then shows itself over the whole body, remains for a few days, and then disappears; the elevated cuticle falling off in a fine, branny desquamation. Vibices are occasionally though rarely seen, near the fatal close of the disease. Dr. Stewart met with them in only two of one hundred and thirty-nine cases, and with purpura spots in only three. Dr. Henderson saw only one vibex amongst two hundred patients, and sudamina in only three.

In grave cases, there is sometimes noticed a dark livid or purple color of the skin of the extremities; oftenest in the early, but sometimes continuing through the entire period of the disease.

Sec. V.—*Eschars.* Gangrenous sloughs and ulcerations seem to be common in some epidemics of typhus fever, and rare in others. At Philadelphia, in 1836, they were present in only three or four cases in a hundred. Dr. Pickels says that gangrene of the hips, nates, and shoulders was frequent during the epidemic at Cork, in 1817, 1818, and 1819. Dr. O'Brien, in his Cork Street Hospital Report for 1820, informs us that ulcerations and gangrene of the hips, nates, and sacrum were of very common occurrence, few of the malignant and protracted types of fever being exempt from them. Dr. Percival, of Dublin, says: "Gangrenous extremities were extremely rare amongst my patients."

Sec. VI.—*State of the Blood.* Amongst these miscellaneous symptoms may be mentioned the condition of the blood when drawn from the body. In the epidemic at Philadelphia, the blood was examined in various stages of the disease, except where the state of the patient was such as to render the operation of bloodletting clearly improper. "At a very early period it was dark, without the buffy coat, and offered a large but soft and dark-colored coagulum. At a more advanced stage it presented, in some patients, the dissolved appearance described by various authors as characteristic of the typhus or putrid fevers." Dr. O'Brien says: "In those instances where blood was taken in the advanced period of the disease, I have always found its texture

broken down and dissolved, changing rapidly into a greenish, watery fluid, with little coagulum; indicating great dissolution of the animal fluids, and consequent great debility."[1] Huxham has described quite fully, in his usual rich and excellent manner, the altered state of the blood in typhus.[2]

[1] Trans. of Phys. of Ireland, vol. i. p. 424.
[2] Huxham on Fevers, p. 41, *et seq.*

# CHAPTER III.

## ANATOMICAL LESIONS.

THE pathological alterations in fatal cases of typhus fever have not been so thoroughly and accurately studied as in those of typhoid fever. Our knowledge of the anatomical lesions and of the condition of all the organs after death, in the former disease, is of course much less complete than in the latter. Although the morbid anatomy of typhus fever has by no means been neglected by British observers, who have the best and most extensive opportunities for its investigation, it is nevertheless true that it has not been subjected by them to such comprehensive, numerous, and detailed examinations, as the lesions in typhoid fever have undergone, at the hands of Louis, Andral, Chomel, Bouillaud, and others.[1] Amongst the most valuable and authentic materials for this portion of my history of typhus fever, are the results of the investigations of Drs. Gerhard and Pennock, during the Philadelphia epidemic of 1836. The number of autopsies made by these gentlemen during the prevalence of the disease was about fifty, and the fruits of their researches are especially valuable, on account of the entire confidence which we may feel in their competency as pathological observers, a confidence which we are forced to withhold from very many reporters of the morbid appearances in this as well as in other diseases. The paper of Dr. Gerhard does not contain any particular and formal description of the state of the several organs, and this description I shall be obliged to make up from the six individual cases, the anatomical lesions in which he has minutely detailed. During the years 1838 and 1839, Dr. John Reid, of Edinburgh, made careful and thorough examinations of the bodies of between

[1] This remark, made in my second edition, less than five years ago, is much less true now than it was then. The remarkable researches of Dr. Jenner have added very largely to our minute and accurate knowledge of the anatomical lesions of typhus.

forty and fifty patients who died with typhus fever at the Royal Infirmary of that city. These examinations are reported and analyzed and compared with the symptoms in a spirit the most philosophical, and with a completeness as rarely met with as it is worthy the highest praise. They constitute a very valuable addition to our knowledge of the lesions in this disease.[1] With the materials derived from these sources, and with such others as are accessible and trustworthy, I shall endeavor to make out as full an account of the pathological anatomy of typhus fever as, in the present state of science, it is possible to do.

## ARTICLE I.

### LESIONS OF THE THORACIC ORGANS.

Sec. I.—*Lungs.* The morbid alterations which are found within the cavity of the chest seem to be not less constant and important in typhus than in typhoid fever. The lungs were more or less changed from their healthy condition in all the cases reported by Dr. Gerhard. This change generally consisted in a somewhat peculiar condensation of a portion of one or both lungs. The tissue of the lung was more solid and heavy than in its natural state; quite or nearly impermeable to the air, sometimes friable and sometimes not so; of a dark and sometimes a livid red; not granular, like hepatization, but resembling in some degree, when torn, the structure of the spleen. This alteration was most frequent in the lower and posterior portions of the organs. The mucous lining of the trachea and bronchial tubes was in many cases of a rosy red color, sometimes with a livid tinge; but it was rarely changed, either in thickness or consistence.

In only two or three of thirty-five cases, examined by Dr. Jenner, were the lungs found free from disease. In three cases, there was simple congestion of the posterior part of the lungs. In three cases, there was congestion with diminished consistence. In eleven cases, there was congestion of the posterior part of the lung, with non-granular consolidation of the most depending

[1] Between 1839 and 1841, Dr. Reid made careful dissections in one hundred additional cases of continued fever. The results of these examinations will be found in the present edition.

layer of pulmonary tissue; in some cases, extending to both lungs, in most limited to one. In four cases, there was more or less edema. In eight cases, there was lobular consolidation, granular or non-granular. In two cases, there was gangrene.

The following is Dr. Jenner's description of the congestion of the posterior portion of the lung, with non-granular consolidation of the most depending part of the organ, a condition that he did not find after death from typhoid fever. "The posterior portion of the lung was congested, and its consistence diminished; the most depending layer of pulmonary tissue (the subject being on its back) which extended in different cases from a quarter of an inch to two inches into the substance of the lung, was solidified, very dark-bluish chocolate in color, gorged with non-aërated dark claret serosity, which flowed freely from the cut surface; it was scarcely softened; the whole of the solidified layer sank in water. The solidified portion was limited to the part of the organ which lies in the hollow formed by about the fourth, fifth, and sixth ribs. * * * The solidified and crepitant tissue passed imperceptibly the one into the other."[1]

Of forty-three cases examined by Dr. Reid, in 1838 and 1839, there was more or less lesion of the lungs in all. In fifteen of these the lesion consisted of simple congestion, at the most depending portion of the organs; in thirteen cases, the posterior and middle parts of both lungs were gorged with blood and frothy serum, and some portions were so dense as not to crepitate when cut, though they did not present any granular appearance; and in ten cases, there was increased effusion into the bronchial tubes.[2] In thirty-nine of these cases, the brain was also examined; and it appears, from a careful comparison, that extensive engorgement and congestion of the lungs were more frequently found associated with those cases in which there was increased serous effusion within the cranium than with those where this condition did not exist, indicating some special relationship between the two phenomena.[3]

SEC. II.—*Larynx and Pharynx.* Dr. Jenner found unequivocal traces of disease of the larynx or pharynx, or of both,

[1] Jenner, &c. p. 50.

[2] Between 1839 and 1841, Dr. Reid examined the lungs in eighty-eight fever cases, with much the same general results.—*Edin. Med. Journ.*, Aug. 1842.

[3] Edin. Med. and Surg. Journ., Oct. 1839.

in nine of twenty-six cases. "The larynx and pharynx were deep purple, and covered with slimy mucus in one case. In four, there were unequivocal traces of inflammation in both organs; thus, in one of the four, the mucous membrane of the pharynx was deep red, of the larynx vivid scarlet, the redness on minute inspection being found to be punctiform; in another of the four, the lining membrane of the pharynx was of a dirty-yellowish color, and so soft that it was removable by the gentlest scraping; the chordæ vocales swollen, the rima glottidis a mere chink, the mucous membrane of the larynx generally vividly injected and covered with muco-purulent fluid, and on the chordæ vocales, and on the mucous membrane lining the larynx above the chords, were numerous shreds of white, opaque, lymph-like matter, readily removable. In the third case, the lining membrane of the pharynx was covered with thick mucus, felt rough, apparently from enlargement of its follicles, and was of a dull purple color; there was a small ulcer on either chorda vocalis, but no other trace of inflammatory action within the larynx. The pharynx in the fourth case was studded with small yellowish spots, from which, on section of the mucous membrane covering them, a drop of purulent-looking fluid exuded. The lining membrane of the larynx in the same subject was dusky red, the chordæ vocales and arytæno-epiglottidean folds distinctly thickened from effusion of serosity into the submucous cellular tissue."[1]

Sec. III.—*Heart and Blood.* The heart was found in some of Dr. Gerhard's cases softened, flabby, and easily broken down; in others, it was in its usual condition.

The appearance of the blood, contained in the heart and in the large vessels, was striking and peculiar. It was of a very dark color, often almost black, thick in its consistence, and sometimes oleaginous. In one case, the blood in the cavities of the heart, in the aorta, the vena cava ascendens, and in the femoral vein, is described as being like molasses, in color and consistence, with minute fatty globules floating in it.

The substance of the heart, in Dr. Shattuck's cases, was not altered. In the right ventricle, there were from one to three ounces of black, liquid blood; and in three cases, a somewhat smaller quantity in the left.

[1] Jenner, &c: p. 50.

In all Dr. Reid's cases, the blood appeared to be in a fluid state, or nearly so, in the large veins; but in several, a greater or less number of coagula, generally small and soft, were found in the right side of the heart. In two subjects the blood, in the same situation, was in a grumous state.

Of twenty-nine cases, Dr. Jenner found the heart flabby in fifteen, and firm in fourteen. In twelve cases, the lining membrane was stained of a dusky-red color. The staining of the endocardium, and the flabby condition of the heart were generally found together; and they were frequent in proportion to the length of time that had elapsed after death, before the bodies were examined.[1]

"The fluid condition of the blood generally," says Dr. Jenner, "was observed in about equal proportions in the subjects dead from typhoid and typhus fevers; but with this exception, there was a marked difference in the blood in the two diseases; it was far more profoundly diseased, *i. e.* it deviated far more from its healthy condition, in the cases of typhus than in those of typhoid fever."[2]

## ARTICLE II.

### LESIONS OF THE BRAIN.

In all the cases reported by Dr. Gerhard, there was unusual engorgement of the sinuses and the larger vessels of the brain. These were filled with dark-colored fluid blood, in some cases, in the large sinuses, surrounding a soft, greenish coagulum. Inflammatory injection of the pia mater is not mentioned. Varying quantities of serum, from one or two drachms to one or two ounces, were found, in a certain proportion of cases, under the arachnoid, or within the ventricles. The medullary portion of the brain was frequently of a violet tinge; otherwise, the substance of the organ was unaltered. In Dr. Shattuck's cases, observed at the London Fever Hospital, the organs in the cranial cavity presented no remarkable lesions. In three of them, there was slight sub-arachnoid infiltration. Of forty-three cases in which the brain was examined by Dr. Reid, in 1838 and 1839, there was

[1] Jenner, &c, pp. 80–82. [2] Ibid. p. 84.

increased effusion of serum in twenty-five. This effusion, in a majority of instances, was situated between the arachnoid and the pia mater, and was commonly moderate in quantity, in many cases elevating the arachnoid above the surface of the convolutions only at the depending portions of the brain. Nearly all these patients exhibited more or less prominent cerebral symptoms; such as delirium, coma, *subsultus tendinum*, &c.; but these symptoms were as frequently present, and as strongly marked, in the class of cases where there was no increased effusion of serum as in the others. Of course, it is impossible to attribute the cerebral symptoms to the serous effusion. In every case but one, the bloodvessels of the brain are said to have been "well filled," and their congested condition was indicated by the number of bloody spots which appeared upon the cut surfaces of the organ, although these may have depended in part upon the fluidity of the blood.[1] Dr. Reid examined the brain in eighty-two additional cases of continued fever, between the years 1839 and 1841, and the general results corresponded very nearly with those just stated.[2]

In five of thirty-nine cases examined by Dr. Jenner, coagula of various sizes were found within the cavity of the arachnoid. "In every case the coagulum was in the form of a delicate red film, varying in thickness, and consequently in hue, in different cases and in different parts of the same clot. It was almost colorless where thinnest, bright red where a little thicker, and deep purple at the thickest parts. It was in every case situated on the convex surface of the brain, and in one stretched from the anterior lobe to the tentorium, and from the median fissure to a point corresponding to a line drawn transversely, just above the external auditory foramen. In one case it consisted of two or three delicate fibrinous films only. When the dura mater was reflected, part of the clot adhered to the layer of arachnoid covering the pia mater. In three of the five cases the clot was double, *i. e.* existed on both hemispheres of the brain. In two cases it was confined to the right side. In one of the five it was accompanied by effusion of blood into the substance of the rectus abdominis. The substance of the brain was firm in four of the five, and apparently healthy in all. The vessels of the cerebral

[1] Edin. Med. and Surg. Journ., Oct. 1839. [2] Ibid., Aug. 1842.

substance and its meninges were not particularly congested; the blood in the vessels of the pia mater fluid, but unable to be pressed out of them into the cavity of the arachnoid. No aperture could be found from which the blood had escaped—the sinuses were perfectly healthy; the sources of the hemorrhage could not, consequently, be discovered."[1]

## ARTICLE III.

### LESIONS OF THE ABDOMINAL ORGANS.

SEC. I.—*Stomach.* The mucous membrane of the stomach was more or less altered in all the cases reported by Dr. Gerhard. The most constant change consisted in softening of the membrane in the cardiac extremity, or grand *cul-de-sac.* This softening was sometimes confined to a small portion of the membrane; sometimes it was quite extensive. It varied in degree, from a moderate diminution of the consistence of the membrane to its pulpy disorganization. In some instances the softening extended to the other coats of the stomach. Mamellonation of the mucous membrane, especially towards the pyloric extremity, was not uncommon. In some cases there was blue engorgement of the large veins; in some a pointed redness, and in others a continuous dull slate color of the mucous coat.

Dr. Jenner found the mucous membrane of the stomach pale, or healthy in color, in twenty-three of thirty-seven cases. It was of a uniform dusky gray hue in two cases. There was some redness, or minute hemorrhagic spots in a small number of cases. In one case there was recent ulceration. Mamellonation was noted in fourteen cases. The consistence of the mucous membrane was normal, or nearly so, in twenty-two cases. In four cases there was extreme softening of the great *cul-de-sac*, so that it ruptured in the removal, or in the washing of the organ.

SEC. II.—*Intestines.* The intestinal canal in all its tissues, and throughout its entire extent, was very constantly and remarkably free from disease in all Dr. Gerhard's cases. In the reported cases no appreciable lesion is mentioned, excepting occasional spots or patches of ecchymosis. The examinations were tho-

[1] Jenner, &c. p. 47.

roughly made, and especial solicitude was felt, and corresponding carefulness was taken, to ascertain accurately the state of the small intestine, and its elliptical plates. *Amongst the entire number of autopsies there was but a single case, and that of doubtful diagnosis, in which there was the slightest deviation from the natural appearance of the glands of Peyer.* "In the case alluded to, in which there had been some diarrhœa, the agglomerated glands of the small intestine were reddened, and a little thickened; but there was no ulceration, and no thickening or deposit of yellow puriform matter, in the submucous tissue. The disease of the glands resembled that sometimes met with in smallpox, scarlet fever, or measles, rather than the specific lesion of dothinenteritis.

"In all other cases, the glands of Peyer were remarkably healthy in this disease, as was the surrounding mucous membrane, which was much more free from vascular injection than it is in cases of various diseases not originally affecting the small intestine.

"The mesenteric glands were always found of the normal size, varying, as in health, from the size of a small grain of maize to three or four times these dimensions. With the exception of a slightly livid tint, common to them and the rest of the tissues, they offered nothing peculiar either in consistence or color.

"The spleen was of the normal aspect in one-half the cases; in the other half, it was softened, but not enlarged, and in one case out of five or six enlarged and softened.

"Thus, the triple lesion of the glands of Peyer, mesenteric glands, and spleen, constituting the anatomical characteristic of the dothinenteritis, or typhoid fever, although sought for with the greatest care, evidently did not exist in the epidemic typhus. Indeed, it was a subject of remark that, in the typhus fever, the intestines were more free from lesion than in any other disease accompanied by a febrile movement. This exemption extended to the large intestine, until the summer heats began, when a few scattering cases offered some symptoms of diarrhœa, during the prevalence of an epidemic dysentery; and, where they terminated fatally, softening and other signs of inflammation of the mucous coat of the colon were observed."[1]

The liver was found sometimes moderately softened; sometimes engorged with dark, fluid, oily blood, and sometimes spotted

[1] Am. Journ. of Med. Sci., Feb. 1837.

Register of Dissections at the same Institution, kept by Dr. John Home, from 1833 to 1837, showed that, of one hundred and one cases, only seven presented ulcerations of the elliptical plates. In two there was perforation. These were probably instances of typhoid fever. Thickening, mamellonation, and other lesions of the mucous membrane of the stomach, were found in about one-fourth of the cases. The spleen was generally larger than usual, soft, and in some cases almost diffluent. In one instance this organ weighed eleven, and in another fourteen, ounces.

Sec. III.—*Miscellaneous.* The petechial eruption frequently continues visible after death. In three of four cases examined by Dr. Shattuck, the spots penetrated the thickness of the skin to the subcutaneous cellular tissue, and communicated to the parts they occupied a purplish color.

Amongst the pathological phenomena of typhus fever, may be mentioned the tendency which manifests itself, in a certain proportion of cases, to early and rapid decomposition. Dr. Pickels, in his Report on the Typhus Fever at Cork, says that this tendency was shown by the rapid putrefaction of bodies after death, rendering necessary their almost immediate interment. In many instances the skin of the arms, thighs, and of almost the entire body, changed to a deep livid or black color, somewhat of the appearance as if scorched by gunpowder, several hours before death.[1] Dr. Gerhard noticed that rapid putrefaction took place, especially in the bodies of those patients from whom the offensive ammoniacal odor, already spoken of, had been most strongly perceived during life.

Dr. Jenner noticed that, in subjects examined within twenty-four hours after death, *cadaveric rigidity* was found much less constantly in cases of typhus than in those of typhoid fever.[2]

Sec. IV.— *General Remarks.* The most striking fact in the pathological anatomy of typhus fever consists in the absence of any constant and characteristic lesion. One of the most uniform and probably one of the most important alterations is that of the blood. It seems to me, in the present state of our knowledge,

[1] Trans. of Phys. of Ireland, vol. iii. p. 202.
[2] Jenner, &c. p. 40.

quite idle and useless to attempt to trace any obvious connection between the symptoms and the lesions, or, in other words, to refer the former to the latter. The broad and fundamental difference in the state of Peyer's glands, and the mesenteric glands, in typhus and typhoid fever, will, of course, be noticed.

# CHAPTER IV.

## CAUSES.

I SHALL enumerate under this head some of the principal circumstances which appear to favor the occurrence and spread of typhus fever. Our knowledge of its efficient causes, excepting that of contagion, is very limited and imperfect.

SEC. I.—*Locality.* It is very evident that the geographical boundaries within which typhus fever prevails, as a common and more or less constant disease, are much less extensive than those of typhoid fever. The actual extent to which typhus fever has heretofore prevailed in different regions and countries, owing to the imperfect histories which have been left to us of this and of analogous diseases, and the consequent doubtfulness and uncertainty of our diagnosis, is a matter which it is now impossible to determine with any considerable degree of precision. One thing is very certain, and that is, that typhus fever has always been of very rare occurrence in New England. Nathan Smith, one of the great observers of New England diseases, says expressly, that he never met with any other form of continued fever than that which he has so well described under the then common name of *typhus fever*, and which was evidently the *typhoid fever* of this work. Very few of the New England country physicians now living, I presume, have had an opportunity of seeing typhus fever on their own soil; excepting now and then a few instances, in cases of foreigners recently arrived from Britain.

A continued fever, which seems to have been evidently contagious, prevailed in the Boston Almshouse in 1817. The account of it, however, which was published in the *New England Journal of Medicine and Surgery*, for April, 1818, by Dr. John P. Brown, is not sufficiently detailed and particular to enable us to decide whether it was typhus or typhoid fever. Many cases are annually received into the hospitals of our large cities, especially

those of New York, from the British emigrant vessels. The ship Eutaw arrived at New York March 6, 1842, forty-two days from Liverpool, with about two hundred passengers, mostly Irish, seventy of whom were sick with typhus on her arrival. Amongst these there were eight deaths. The bark Barlow arrived at New York from Greenock, May 15, 1842, after a passage of forty days, with nearly fifty typhus patients; there having been three deaths before her arrival. These are instances of what occurs nearly every year.[1] In August, 1840, twenty-one cases of typhus were admitted, from a single vessel, into the Boston Almshouse. Four of the cases were fatal. Dr. Butler informs me that the dulness of the mind, deafness, stupor, suffusion of the eyes, and dinginess of the skin, were amongst the most prominent symptoms. The bowels were usually torpid, and there was slight meteorism in only two or three cases. Dr. Doane, physician at the New York quarantine establishment, informs me that, amongst the most striking and constant phenomena of the disease, he has noticed the injection of the eyes, the fuliginous aspect of the skin and deafness. Diarrhœa is rare, and the alvine discharges, when procured by medicine, are dark colored and offensive. The evidences of the contagious character of the disease observed by Dr. Doane are very positive; during his connection with the institution, a period of about three years, no less than fifteen or sixteen individuals connected with the hospital having died with typhus fever, which had been contracted from the emigrant patients.

The disease which was commonly called spotted fever, and which prevailed in many parts of New England, principally between the years 1807 and 1816, is supposed by some writers to have been the true typhus fever. Dr. Gerhard says that it was similar in its nature to the British typhus. Dr. James Jackson thinks that it was a different disease. It is very certain that, in many important particulars, it bore a very striking resemblance to true typhus. This resemblance is noticed by most writers upon the disease. Dr. Elisha North called it *a new petechial malignant typhus*. Dr. Hale, of Boston, whose description of

[1] The number of these cases during the present year, 1847, has been immensely greater than it ever was before. The hospitals of most of the commercial cities from the St. Lawrence to New Orleans have been crowded with typhus patients, coming mostly in emigrant ships from Scotland, England, and Ireland.

the disease, as it prevailed at Gardiner, Maine, in the spring of 1814, is the fullest and best that has been published, regards it as a congestive fever. He speaks of the many points of resemblance which exist between it and Dr. Armstrong's typhus; but he says, also, that there are many strong points of difference between the two diseases. It is not easy at the present day, upon such evidence as we possess, to decide with any confidence upon the precise character of the spotted fever of New England. Without going any farther into the consideration of this question here, I will merely observe that an examination of most of the records that have been left us of this disease has induced me to believe that it belongs to that class of new and more or less temporary epidemics, each having its peculiar character, marked by its peculiar phenomena, and depending upon new and peculiar combinations of unknown morbific influences—which have always from time to time made their appearance, rather than to the class of established and permanent maladies.

Dr. Gerhard thinks that some of the epidemics which overran the Middle States, between the years 1812 and 1820, were of typhus fever; and that it was of this disease that three distinguished professors in the University of Pennsylvania—Rush, Wistar, and Dorsey—died. He says that Dr. Parrish, one of the most experienced physicians of Philadelphia, who practised very extensively amongst all classes of inhabitants in the winter of 1812–13, when he saw some of the cases at the Philadelphia Hospital, in 1836, immediately recognized their identity with those of the former epidemic. A pupil of Dr. Gerhard's, from North Carolina, informed him that he had witnessed a similar fever amongst the negroes. It seemed to be contagious, and from the absolute disregard of cleanliness and the crowded state of the negro cabins, it frequently spread extensively. It is hardly necessary to say that these and similar opinions are to be received with a good deal of caution; and that the extent and frequency of the prevalence of true typhus fever in the United States can only be determined by the accurate and continued observations of the future. Upon this question, as upon so many others connected with epidemic disease, the past sheds but a confused and uncertain light.

It is very clear that, for the last thirty years, at least, true typhus fever has been almost or entirely unknown in France. In

the years 1813 and 1814, there appeared at Paris a severe epidemic fever, which was first noticed amongst the troops who returned from Napoleon's campaigns in Germany, and the east of France; and which afterwards spread amongst the inhabitants of Paris, and other large cities, and was everywhere extremely fatal. This epidemic, Dr. Gerhard is disposed to believe was typhus fever; although Louis, Chomel, and other French physicians who observed it, are inclined to regard it as identical with their prevailing typhoid fever, or dothinenteritis.

A writer in the October number of the *British and Foreign Medical Review*, for 1841, thinks that the fever which devastated Italy in 1816 and 1817 was identical with the typhus of Great Britain.

The fixed and constant residence of typhus fever is to be found in the British Islands. The mud cabins of Ireland, and the damp dark cellars of the cities of Great Britian, are its true *habitat*. These are its perpetual lurking-places, and here it is always to be found. The terms *Irish* typhus and *British* typhus have, indeed, come to be its most distinctive appellations.

The number of deaths in England, except the metropolis, from typhus, in 1841, was 13,795; of these, 6,618 were males, and 7,077 females. The number in 1842, was 15,027; of these, 7,056 were males, and 7,971 females.[1]

According to the Report of the Registrar-General, there is no marked difference in the mortality from typhus in town and country districts in England; the annual mortality to one million living, in 1841, being for the town districts, 908; and for the country districts, 929.

Dr. John Hunter says he never met with the disease in the West Indies.[2]

Sec. II.—*Season, Weather, &c.* Typhus fever prevails at all seasons of the year. Several of the Irish writers have remarked, in general terms, that the disease is found to prevail most extensively during the early part of summer. It seems probable, however, from extensive and accurate researches, that the difference in the extent to which the disease prevails in the different seasons of the year is not very great. Illustrative of this point,

[1] Rep. Reg. Gen.

[2] Hunter's Diseases of the Army, p. 83.

so far as a single locality is concerned, I copy the following table from Dr. Mateer's statistics of fever, during a period of eighteen years at the Belfast Fever Hospital. It shows the aggregate number of admissions into the hospital, arranged according to the four seasons, for this long and continuous series of years, with the average rate of mortality for the several seasons.

| | | |
|---|---|---|
| Summer | 2596 | 1 to 17$\frac{3}{7}$ for Summer. |
| Autumn | 2482 | 1 to 15$\frac{7}{8}$ for Autumn. |
| Winter | 2359 | 1 to 14$\frac{1}{2}$ for Winter. |
| Spring | 2412 | 1 to 13$\frac{1}{4}$ for Spring. |

It appears from this table that the influence of season, in favoring the prevalence of typhus fever, is small. It appears, also, that the rate of mortality is highest in the spring and winter.[1]

The deaths from typhus in England, in 1841, were distributed in the following manner through the quarterly periods of the year: in spring, 4218; in summer, 3498; in autumn, 3197; in winter, 3941.[2] In the following year, 1842, there was a wider difference; the deaths in spring, being 3910; in summer, 3480; in autumn, 3680; and in winter, 5131.[3]

As to the effects of the sensible qualities and changes of the weather, nothing very positive seems to have been ascertained. These effects are doubted by some observers, and not agreed upon by others, who admit their existence. Thus Dr. Percival says: "It has long been observed that protracted dry weather is peculiarly productive of fever in Dublin;" and Dr. Cheyne says: "More than thirty years ago, it was remarked by a very eminent physician, the late Dr. Quin, that wet and cold summers always proved healthy ones in Dublin." Still, the same excellent observer informs us that the summers of 1816 and 1817, when fever was extensively prevalent, were wet, cloudy, and cold; and Dr. Barker makes the following remark: "The state of the weather, as to moisture, has been said to have affected the progress of this fever in other parts of Ireland. I cannot say that I have observed this in Dublin, although I have kept a register of the weather during several years past."[4] Dr. Henderson, in his account of the epidemic at Edinburgh, in 1838 and 1839, says

[1] Dub. Journ. of Med. Sci., vol. x. p. 34. [2] Rep. Reg. Gen., 1843.
[3] Ibid., 1844. [4] Trans. of Phys. of Ireland, vol. ii. p. 527.

that cold weather had commonly the effect of increasing the number of admissions into the Infirmary, which declined again when the temperature was moderate.[1] Dr. James Arrott, of Dundee, remarks that all his inquiries tend to prove that great vicissitudes of the weather, and especially that great degrees of cold and wet, are powerful causes of typhus.[2] The great epidemic of 1741 was coincident with two very severe winters and two very dry summers, one of which was very hot; that of 1817 was attended by mild winters and very wet and cool summers. Rutty says: "Whenever we observe the usual harmony and proportion of the winds and attendant weather to vary *much*, we may expect an unhealthy season."[3]

SEC. III.—*Contagion.* Typhus fever has been almost universally regarded, by those physicians who have enjoyed the best and most extensive opportunities for observing it, as a disease capable of direct transmission from one individual to another, by means of contagion. Amongst others of the older British writers who maintained this opinion, may be mentioned Willis, Huxham, Grant, and Pringle; and amongst the moderns, there are but few who dissent from it. Different observers differ, it is true, amongst themselves, in regard to the extent to which the principle of contagion operates in the propagation of the disease, and in regard to some other points connected with this subject, but they very generally admit the fundamental fact, of its contagious transmissibility. Dr. O'Brien, in a Dublin Fever Hospital Report, for 1819, in allusion to this matter, says: "That the skepticism of one or two individuals has gone so far as to deny the existence of contagion altogether in the fevers of our climate, but that the opinion is so singular, and so contrary to the general sense of mankind, that deservedly little attention has been paid to it."

The extreme doctrine in regard to the contagiousness of typhus fever is, *that the disease is exclusively and invariably the product of contagion;* that it never arises from the action of other causes alone; that it is never spontaneous, as it is called, in its origin; that it resembles in this respect smallpox, and not scarlatina. This opinion is not generally entertained, and must have been

[1] Edin. Med. and Surg. Journal, Oct. 1839.
[2] Ibid., vol. li. p. 127.
[3] Harty's Sketch, p. 142.

always the result rather of philosophising than of observing; for, certainly, the evidence of direct observation is altogether against this exclusive opinion. It is easy to see that the accurate settlement of a question of this character is exceedingly difficult, and that where a considerable number and variety of influences are or may be acting together in the production of disease, it must be often quite impossible to determine, with any degree of certainty, the actual and comparative agency of each. One thing, however, in regard to the present matter, is perfectly clear; and that is, that, in very many cases, there is no positive evidence, whatever, of the action of contagion. Dr. Edward Percival says: "Having made it my business to inquire into the origin of most cases of fever that were admitted to the Hardwicke Hospital, during several years, I found the results to point less frequently and precisely to a contagious source than I should have anticipated."[1] Dr. F. Barker observes that, of ninety patients in the Cork Street Fever Hospital, in October, 1817, of whom minute inquiry was made in relation to this point, only twenty-four could refer their cases to the effects of contagion.[2] From a pretty careful and certainly an unprejudiced examination of this subject in the observations and opinions of British writers, I think we may look upon it as well settled, that the morbid actions constituting typhus fever are capable of generating in the body a poison, which, when concentrated, and aided in its operation by favoring circumstances, will produce the same disease in persons exposed to its influence. We may consider it also as not less certain, that the same poison may be generated by other agencies, amongst the most active of which seem to be the crowding together in close, unventilated apartments, amidst accumulated personal filth, of the wretched and suffering poor. I shall state the more obvious grounds upon which these conclusions rest.

Dr. O'Brien, in his Cork Street Fever Hospital Report for 1816, states that, of nine physicians who had been permanently attached to the Institution, five had had the disease, in two of whom it proved fatal. Of the four who escaped, two had had contagious fever before their connection with the hospital. All the nurses employed in the hospital had suffered from the dis-

[1] Trans. of Phys. of Ireland, vol. i. p. 287. [2] Ibid., vol. ii. p. 580.

ease.[1] Of the medical men connected with the South Fever Asylum, at Cork, during the epidemic of 1817, 1818, and 1819, seven physicians, the apothecary, and his apprentices, contracted severe fevers. Two of the physicians died. Nearly all the other persons connected with the hospital, and who, from the nature of their occupations, were in frequent and close communication with the sick—the hair-cutter, the porters, the nurses—were attacked with the fever.[2] At the Hardwicke Fever Hospital, Dublin, in 1816, all the nurses and other residents in the hospital, amounting to twenty-three persons, escaped the disease. Dr. Cheyne attributes this exemption to the cleanliness and free ventilation of the Institution.[3] Still, it appears that, in the following year, many of the officers of the same establishment caught the fever. Amongst them were eight or nine medical gentlemen, the steward, all the servants, in succession, whose business it was to remove the clothes of the patients upon their first admission, and most of the unseasoned nurses.[4]

The opinions of the celebrated Dr. Armstrong, upon this point in the history of typhus, are well known. In the early part of his life he adopted the popular doctrine of the contagious nature of the disease. In a paper on the origin, nature, and prevention of typhus fever, communicated to the *Medical Intelligencer* in May 1822, he expresses some doubts as to the correctness of his former opinions in relation to this question. His skepticism in regard to the contagious character of typhus, under any circumstances, continued to increase with his advancing years and experience; and in a lecture on the disease, published in 1825, although he does not deny the possibility of the transmission of typhus by contagion, he is unwilling to admit the existence of any positive evidence that such is ever the case. It ought, however, to be stated here, that Dr. Armstrong's conclusions upon this subject were evidently somewhat influenced by his singular doctrine of the *essential identity of intermittent, remittent,* and *typhus fevers, and of their dependence upon a single common cause.*[5]

It may be added in connection with this subject, that nothing

[1] Trans. of Phys. of Ireland, vol. ii. p. 485.
[2] Ibid., vol. iii. p. 224.
[3] Dublin Hosp. Reports, vol. i. p. 55.
[4] Ibid., vol. ii. p. 58.
[5] Memoir of the Life and Medical Opinions of John Armstrong, by Francis Boott, vol. i. pp. 149–171.

is more common, during the prevalence of typhus fever, than for a considerable number of individuals residing in the same room to be successively attacked with the disease. In many instances all the members of a large family, and even of several families, inhabitants of the same house, have, one after another, become its subjects. This common occurrence is noticed by most of the Irish writers upon fever. Of 9588 patients received into the Belfast Fever Hospital, from 1818 to 1835, 2342 came in single cases, while 7246 came in numbers of two or more from the same family. They came from 1856 families, thus giving an average of nearly four patients to a family.[1] One of the circumstances which early attracted the attention of Dr. Gerhard in the Philadelphia typhus of 1836, was the fact that the patients came in groups, and several from the same house. Amongst the first admitted into the hospital were seven negroes, the entire population of a cellar, in the lower part of the city. This occurrence of several cases in the same house has been but very rarely observed amongst the comfortable and rich classes in Ireland. Under these circumstances, the fever has not usually extended to more than a single member of a family.

The latent period of the contagious principle has not been accurately ascertained. It is probably different in different cases. Dr. Barker says that, in many instances, it seems to extend to two or three weeks. Dr. Perry of Glasgow, intimates incidentally, in his letter on typhus fever, published in the *Dublin Journal of Medical Science*, for January, 1837, that the disease rarely if ever makes its attack in less than eight days from the time of exposure. The same gentleman says that numerous observations and experiments have satisfied him that typhus fever does not communicate its contagious principle before the ninth day of the disease, and perhaps not till a later period. Many very striking instances are recorded, however, by different writers, in which the disease seems to have been directly and immediately received from a patient laboring under it, and to have instantaneously manifested itself. Dr. Henry Marsh, of Dublin, in an admirable paper upon the origin and latent period of fever, published in volume IV. of the Dublin Hospital Reports, enumerates twenty cases of this sort. He says that they constitute a few amongst many facts of the

[1] Dub. Journ. of Med. Sci., vol. x. p. 35.

same kind, which he has been able to collect, and that every day's observation adds to their number. In most of these instances, the persons, many of whom were nurses or physicians, while in the act of rendering some service to the sick, which exposed them to the strong, offensive odor arising from the beds or bodies of the patients, were immediately seized with headache, great prostration of strength, and with nausea, perhaps, or rigors; and these symptoms were soon followed by the full development of the disease, in many of which cases it proved fatal. He mentions the deaths of three physicians, Dr. Crawford, Dr. James Clarke, and Dr. Waring, under such circumstances. Two cases of a similar kind are reported by Dr. Gerhard, in his account of the Philadelphia typhus of 1836. He says: "The nurse was shaving a man, who died in a few hours after his entrance; he inhaled his breath, which had a nauseous taste, and in an hour afterwards was taken with nausea, cephalalgia, and ringing in the ears. From that moment the attack of fever began, and assumed a severe character. The assistant was supporting another patient who died soon afterwards; he felt the pungent sweat upon his skin, and was taken immediately with the symptoms of typhus." It would be easy to multiply, and that to a great extent, similar examples. Sir John Pringle says of the jail fever: "I have observed some instances of a high degree of contagion attending it; but the common course of the infection is slow, and catching to those chiefly who are constantly confined to the bad air, such as the sick in hospitals, and their nurses, and prisoners in jails."[1]

In connection with this subject it should be stated that, even during the prevalence of very general epidemics, certain circumscribed localities sometimes are nearly or quite exempt from the disease. Thus, in the House of Industry at Cork, and in the Foundling Hospital of that city, in 1817, 1818, and 1819, the disease scarcely showed itself, when very prevalent amongst the inhabitants in general. The jail at Cork also remained free at the same time; and in the Marine School, and the Royal Hibernia Military School, in Dublin, there were but few cases.[2] The occasional exemption of the inmates of these and similar institutions has been generally attributed to their seclusion, and consequent freedom from exposure to contagion.

[1] Dis. of Army, p. 256. [2] Account, etc. By Barker and Cheyne, vol. i. p. 96.

Another important quality of the contagious poison seems to be very well ascertained, to wit, that, as a general rule, it must be concentrated and abundant, so to speak, in order to excite the disease. A few cases in a large, cleanly, and well-ventilated ward, do not often communicate the disease to the other occupants, nor to the medical attendants and nurses. Dr. Christison's testimony on this point is very explicit and direct. He says: "The infection of continued fever is for the most part by no means virulent. This is contrary to universal prejudice among unprofessional persons, and to the opinion entertained even by some members of the medical profession. But it is nevertheless certain, so far as minute observations of several violent epidemics during the last twenty years can determine the point, that moderate precautions will render the infectious atmosphere inert. Cleanliness and ventilation will speedily extinguish any epidemic. For it is well ascertained that fever, communicated to an individual in the better ranks by attendance on the sick in hospital, is very rarely propagated in his own station, or to any of his attendants. Among numerous instances known to the writer, of young practitioners and medical students who have caught fever in the prosecution of their practical studies, not a single case has occurred where the disease was communicated in their families at home or in their lodging-houses."[1]

SEC. IV.—*Epidemic.* The entire history of typhus fever shows, conclusively, that it is often very intimately dependent upon that unknown influence, or combination of influences, to which the term *epidemic* has been applied. After estimating, as nicely as our means will enable us to do, the agency of the several supposed causes, exciting and predisposing, of the disease, we are still unable to account for its general prevalence, during certain periods, and over more or less extensive regions, without

[1] Tweedie's Library of Practical Medicine. I cannot refrain from asking here, in a note, how far this dependence of fever upon a want of cleanliness and ventilation is applicable to *typhoid fever?* Do my friends who believe in the essential identity of these two diseases, and who are familiar with the continued fever of this country, believe that *any cleanliness* and *any ventilation* will arrest the latter disease? Let them try it, when typhoid fever prevails as it so often and so extensively does during the beautiful and breezy Indian summer, amongst the most cleanly, the most temperate, the best clad, the best fed, and the best sheltered people that this world has ever seen—the rural population of the Eastern States.

resorting to this ancient hypothesis of an occult influence, or agent, coming, we know not whence—whether from the earth, the air, or the stars—and acting, we know not how, in the production of its results. In the case of typhus fever, as of many other diseases—of scarlatina, of measles, of smallpox—it is evident that, independent of all the circumstances which are admitted to favor its occurrence and its extension, there exists at certain times a predisposition or tendency to the disease which we are wholly unable to account for, or explain. Like the smallpox, and like scarlet fever, it is always present in Ireland; but at considerable intervals, we find it increasing immensely in the extent of its prevalence, and after the lapse, usually, of from one to two or three years, again subsiding to its permanent and average standard. Several of the great Irish epidemics have been already frequently alluded to. Barker and Cheyne are inclined to think that the *plagues*, as they were called, which accompanied the two great civil wars in Ireland—the first in Queen Elizabeth's time, and the second, that which commenced in 1641—were epidemics of typhus. There are subsequent histories of epidemics, more or less complete, in 1708 and 1709; in 1718, 1719, 1720, and 1721; from 1728 to 1731; in 1740 and 1741; in 1762; from 1797 to 1802; in 1817, 1818, and 1819, and so on.

Barker and Cheyne estimate the number of cases during the epidemic of 1817, 1818, and 1819, at *one million and a half*.

It is remarked by Barker and Cheyne, that the duration of epidemics has in many instances been about two years. This was the case in 1740 and 1741; in 1800 and 1801; and in 1817, 1818, and 1819.[1]

SEC. V.—*Crowding; Filth; Famine, etc.* Amongst the circumstances which, to say the least of them, are very frequently *associated with the presence of typhus fever*, are the crowding of persons together in dark, damp, and badly-ventilated apartments; anxiety; fatigue; excesses; exposure to the inclemencies of the weather, and scanty and poor food. The real and relative agency of these several influences, in the production of the disease, has not been very minutely and carefully studied, but there can be little doubt that they are often amongst its most powerful and prolific causes.

[1] Account, etc., vol. i. p. 133.

The very intimate connection of typhus fever with crowded, ill-ventilated, and filthy apartments, has been universally admitted. This is the pestilence which dogs the footsteps of retreating and discomfited armies, and takes up its dwelling in their tents; which hides itself within the dark and noisome walls of ancient prisons; which lurks amidst destitution and vice, in the narrow lanes and unlighted cellars of great cities, and which has been, for many generations, the perpetual inmate of the low mud-cabins of the Irish poor.

Of jail fever, Sir John Pringle observes: "This disorder is incident to every place ill-aired and kept dirty; that is, filled with animal steams from foul or diseased bodies. And upon this account, jails and military hospitals are most exposed to this kind of pestilential infection; as the first are in a constant state of filth and impurity, and the latter are so much filled with the poisonous *effluvia* of sores, mortifications, dysenteric and other putrid excrements. I have seen instances of its beginning in a ward, when there was no other cause but one of the men having a mortified limb."[1]

The connection of the great typhus epidemics of Ireland with a general scarcity of food has long been noticed. It has been estimated that, during the years 1740 and 1741, eighty thousand persons died in Ireland, of fever, dysentery, and famine. Dr. Rutty, then a practising physician in Dublin, informs us that, "in the autumn of 1740, there was a great dearth of provisions in Ireland, which proceeded almost to a famine in winter, the potatoes having failed, whilst other provisions bore double or treble their usual price." A subsequent epidemic of 1800 and 1801 was also attended by a great scarcity of provisions. Again, the terrible epidemic of 1817, 1818, and 1819, was preceded, and during a portion of the time at least, and in many places accompanied, by a dreadful deficiency of even the commonest food. There are few darker pages in the long, sad annals of Irish poverty and disease, than that upon which is written the history of this epidemic.[2] The crops of 1816 had almost entirely failed, and

[1] Pringle's Dis. of the Army, p. 255.

[2] Let me add, in a note, that many of these otherwise gloomy pages are made radiant and luminous with affecting examples of the patient resignation of the poor sufferers; and of the self-forgetfulness and devotion of the Roman Catholic clergy, the physicians, and other benevolent friends of the sick. Few incidents

the same thing was true to a considerable extent of the following year. Not only was a large portion of the grain destroyed by the unfavorable weather, but the little that was saved was of a poor quality.

It would be wrong, however, to attribute this or any of the preceding epidemics to famine alone. Typhus fever is constantly present in various parts of Ireland, and it has more than once extensively prevailed when the harvests had been good, and food unusually abundant. This is only one of many co-operating influences, to which the wide-spread prevalence of the disease is to be attributed.

Many of the Irish writers often speak of having seen typhus fever occurring several times in the same individual. Dr. Stoker speaks of the poor as having frequent attacks of fever, in the course even of a short life, and thinks that few adults have escaped these attacks, although he has no doubt that the succeeding attacks are milder than the first. Dr. O'Brien, in one of his hospital reports, says: "Some of the nurses have had the disease three or four times." Others have remarked that a second attack of the disease is very rarely witnessed when the first had been severe, or when it had been attended by an abundant eruption. And there seems good reason for believing that such is the case. Dr. Barker, in his Report of the Cork Street Hospital, Dublin, states that he has for some time entertained the opinion that sufferers from fever, attended with the petechial eruption, if they are not altogether secured by it from a second attack, are not at least so liable to it as those who have had a fever of the ordinary kind. "Though I have frequently made the inquiry," he adds, "I have not found a patient in whom this symptom was distinct, who had suffered from the same fever on any former occasion. But, whatever may be the result of more minute inquiry, it may be asserted that the chances of the recurrence of fever diminish in proportion to the continuance and severity of the first attack." Dr. Bracken, of Waterford, after quoting the above, says: "It appears to me that this opinion is supported by experience, as well as by reasoning from similar facts. Since I first observed

in medical biography are more touching and beautiful than the sketch which is given of the early death of young Gillichan, of Dundalk, one of the many martyrs to science and humanity, whose brief lives shed light and glory on the history of our art.

this remark, I have kept the subject in view, and, after some attention to it, I have not been able to ascertain that more than three persons, out of many hundreds who came within my observation, have had relapse or recurrence of fever, after being previously affected with the symptoms in question."[1] Dr. Trotter says: "During our extensive and long experience of the origin, progress, and extinction of contagion, in ships, and everywhere else, I have entertained a strong suspicion that typhus infection *very seldom* affects a person more than once in a lifetime."[2] Dr. Perry, of Glasgow, in a letter to the editors of the *Dublin Journal of Medical Science*, says: "I have for some years entertained the opinion, founded upon an extensive series of observations, that contagious typhus is an *exanthematous disease*, and is subject to all the laws of the other exanthemata; that, as a general rule, it is only taken once in a lifetime, and that a second attack of typhus does not occur more frequently than a second attack of smallpox; and, judging from my own experience, less frequently than a second attack of measles or scarlet fever."

SEC. VI.—*Age.* There is no evidence that this disease is confined to any period or periods of life. During its prevalence at Philadelphia, in 1836, children were rarely attacked by it; but after childhood, age seemed to exercise little or no influence upon the susceptibility to the disease. Amongst the whites, where the age could be better ascertained than amongst the blacks, there were as many patients over thirty-five years old as there were under this age. Dr. Edward Percival, in his Report on the Epidemic Fevers of Dublin, at the Hardwicke Fever Hospital, during the years 1813, 1814, and 1815, says that the disease prevailed continually amongst the boys and girls of the Bedford Asylum; characterized by petechiæ, great failure of strength, a turgid countenance, and considerable stupefaction.[3] Eleven hundred of these children were crowded together in a building originally intended to accommodate only six hundred. Of three thousand nine hundred and seventy patients, received into the Cork Street Hospital, Dublin, in 1817 and 1818, there were under

[1] Barker and Cheyne's Account, etc., vol. i. p. 241.
[2] Medecina Nautica, p. 213. [3] Trans. of Phys. of Ireland, vol. i. p. 288.

ten years of age three hundred and sixty-two; from ten to twenty years, fourteen hundred and seventy-four; from twenty to thirty years, twelve hundred and sixty-five; from thirty to forty years, five hundred and eight; from forty to fifty years, two hundred and forty-one; and over fifty years, one hundred and twenty.[1] Dr. Barker says that, in the course of the epidemic of the above-mentioned years, he witnessed the disease in many children under the age of four or five years, and in its most exquisite form—that of petechial fever. It will be found from extensive observations, that a large proportion of the cases of typhus fever occur in persons who are between the ages of fifteen and thirty years; but it would be very unsafe to infer from this fact anything positive as to the *liability* of different ages to the disease, unless we have first ascertained the whole number of persons of these different ages exposed to the causes of the fever. From not attending to this and other circumstances in these calculations—from not taking into account all the elements of the problem to be solved—many writers have lost themselves on what Dr. Arrott, of Dundee, calls the "*quicksands of false arithmetic.*"

The average age of forty-seven patients, in whom the disease proved fatal at the Royal Infirmary of Edinburgh, in 1838 and 1839, was thirty-five years and a half, nearly.[2]

SEC. VII.—*Sex.* The influence of sex in predisposing to typhus fever is not very great. It has been generally remarked by Irish observers, that the disease is somewhat more common amongst females than it is amongst males. This fact may be in part, perhaps entirely, accounted for, by the more constant exposure of the females to many of the most active causes of the disease. From Dr. Mateer's statistics, it appears that, of 9588 patients admitted into the Belfast Fever Hospital between May, 1813, and May, 1835, inclusive, 5130 were females and 4458 were males. Dr. Harty gives a table of the admissions and deaths of the two sexes, at some of the principal hospitals of Ireland, from 1817 to 1819. The number of males admitted was 32,144; the number of females 34,398. The male mortality was one in 19.40; the female, one in 24.75.[3] In connection with this

[1] Trans. of Phys. of Ireland, vol. ii. p. 533.
[2] Ed. Med. and Surg. Journ., Oct. 1839. [3] Historic Sketch, etc., p. 29.

subject, Dr. Harty remarks that: "Though it is well ascertained that the epidemic spared neither age, sex, nor condition, and that all were indiscriminately exposed to its attacks, it is yet certain that there were particular periods of the epidemic season, during some of which children, during others adult females, and during others adult males, predominated in number."[1]

SEC. VIII.—*Recency of Residence.* New residents in any given locality seem to be somewhat more liable to typhus than others, although this circumstance has so little influence that it has not been often spoken of by British writers. According to a table published by Dr. Davidson, of five hundred and sixty-eight patients with typhus, admitted into the Glasgow Fever Hospital, in 1838 and 1839, one hundred and seventy-six, or one-third, nearly, were natives of the city; one hundred and ten had been residents less than six months; fifty-five, from six months to a year; ninety-seven from one year to five; and one hundred and thirty, from five years to twenty and upwards. Thus more than half of the whole number had lived in the city five years or upwards.[2]

[1] Historic Sketch, etc. p. 81.

[2] Dunglison's Medical Library.

# CHAPTER V.

## VARIETIES AND FORMS.

THE most common varieties of typhus fever are such as depend upon different degrees of severity, and such as are more or less constantly connected with the different seasons of the year. The proportion of mild to grave cases varies considerably under different circumstances, but it is almost always very great. Cases of all degrees of intensity, from the mildest to the most severe and malignant, just as happens so frequently with scarlatina, and smallpox, are often found together, under the same circumstances, and apparently depending upon similar causes.

During the winter and spring, the disease is more likely to be seriously complicated with pulmonic affections. In the summer and autumn, it is frequently associated with gastro-intestinal irritation. The disease in certain places, and for a limited period of time, is occasionally marked by certain peculiarities. Dr. John Cheyne remarks that he never witnessed continued fever with so many inflammatory symptoms, as in the spring and summer of 1816, at Dublin; and that the blood was sizy in nearly one-half of the patients who were blooded. In August and September, the cases were often complicated with dysentery, and with symptoms of gastro-hepatic derangement. A distressing nausea was common, with a bitter or foul taste, and a yellow tongue. After this period, the fever became more severe in its character, and was frequently complicated with an inflammatory state of the bowels.[1] In December, and the following January, many cases were attended with inflammation of the bronchial mucous membrane. The same writer says that, of one hundred and seventy-five patients, admitted into two wards of the Hardwicke Hospital during the months of April, May, and June, 1818, at least three-fourths had cough, with pains or stitch, oppression in the chest,

[1] Dub. Hosp. Rep., vol. i. p. 15, *et seq.*

# CHAPTER VI.

## DURATION AND MARCH.

SEC. I.—*Duration.* The duration of typhus fever varies very considerably in different cases, and under different circumstances. Death often takes place at an earlier period than ever happens in typhoid fever. Dr. O'Brien says that death is not unfrequent on the fifth or sixth day of the disease. Dr. Pickels remarks that the disease, when fatal, rarely exceeded the eleventh or thirteenth day, and in many cases that it was much shorter. Dr. Edward Percival noticed that death was most common between the eleventh and seventeenth days. Dr. Bracken, of Munster, in a communication to Drs. Barker and Cheyne, says that, in the epidemic of 1817, 1818, and 1819, the greatest number of deaths took place on the ninth day; and then successively, on the tenth, twelfth, eleventh, seventh, and eighth.

The statements of most of the Irish writers, in regard to the average duration of the disease, are not, I think, to be very confidently relied upon. They do not tell us in what manner the duration was estimated, nor what mode was adopted for fixing the commencement and the termination of the cases. Dr. Lyne of Fralee, says that, in the epidemic of 1817, 1818, and 1819, the duration of the disease ranged from five to twenty days, the average period being fourteen days.[1] Dr. Bracken, of Munster, estimates the average duration in the same epidemic at nine days before puberty, and at fourteen days for adults.[2] Dr. Pickels, in his Report of the South Fever Asylum, at Cork, for 1817, 1818, and 1819, says that, of fifty-nine cases taken in succession under the age of sixteen years, and which recovered, thirty-seven did not exceed the tenth day, and twenty-two did; and that of sixty cases, over the age of sixteen, which recovered, nine did not exceed the tenth day, and fifty-one did.[3] The testimony of

[1] Barker and Cheyne's Account, etc., vol. i. p. 154. [2] Ibid., vol. i. p. 304.
[3] Trans. of Phys. of Ireland, vol. iii. p. 203.

the Irish observers is very unanimous as to the shorter duration of the disease amongst the young than amongst adults. It is less, also, in mild than it is in grave cases. Dr. Stoker found at the Cork Street Hospital, Dublin, in the summer of 1818, that of four hundred and seventy-one cases, mostly mild, nearly three-fourths terminated on or before the seventh day.

Dr. Alexander P. Stewart says that the mean duration of typhus fever at Glasgow, calculated from the results of many thousand cases during successive years, is about twenty-one days.[1] Dr. Henderson says that the average date of commencing convalescence at the Royal Infirmary of Edinburgh, in 1838 and 1839, was the thirteenth day. The average period at which death took place, calculated by Dr. Reid from one hundred and forty-three cases, was between the twelfth and the thirteenth day.[2]

Sec. II.—*Crises.* Many of the Irish writers on typhus fever allege that, in very frequent instances, the disease terminates in what has been called a *crisis*. That the commencement of convalescence, in this as well as in many other diseases, should be formally and pretty clearly marked by certain phenomena of a decided character, is what we can easily understand, and what we frequently see. The coming on, after its long absence, of quiet and protracted sleep, accompanied as this grateful and refreshing visitation often is, with a diminution in the frequency of the pulse, a restoration of the integrity of the mind, and a change in the state of the skin, from an arid heat to a warm, gentle, and equable moisture, most certainly indicates a great and radical revolution in the condition of the system, which may well be called *a crisis*. But something more than this formal and obvious change in the state of the living tissues from a morbid to a healthy action is often meant, I think, by writers who speak of these *crises* in typhus and other fevers. They tell us of a violent struggle in the suffering economy, which precedes and accompanies the transition of the functions from their diseased and perturbed action to their natural and easy play. They speak as though the recuperative powers of the system, almost worn out

[1] Edin. Med. and Surg. Journ., Oct. 1840.
[2] Ibid., Oct. 1839, and Aug. 1842.

or overcome by the morbific influences which have obtained possession of the organs, had now gathered up and concentrated all their remaining energies; had now taken their desperate and final stand against the further inroads and ravages of disease; and as though the perturbation resulting from this conflict constituted the critical struggle, terminating, as the case may be, either in recovery or in death. This is neither an unfair nor an exaggerated statement of the views of these observers. Thus Dr. Percival, in his Hardwicke Fever Hospital Report, for 1813, 1814, and 1815, says: "The critical period was often a scene of severe struggle, the issue of which was for many hours doubtful. An obscure rigor would set in on the eve of the fourteenth day, or later; delirium and jactitation would increase, the extremities become cold, respiration hurried and oppressed; the countenance pale and anxious; and the pulse, by its frequency, smallness, and irregularity, scarcely numerable. The patient would often moan loudly, from pains referred by him to the bones of his back and limbs. This struggle usually increased for some hours, and then subsided into relief or the gradual extinction of life."[1] Dr. Percival, also, expresses the opinion that the term of convalescence was lengthened or shortened, in proportion as the crisis was fully or obscurely formed. Dr. Cheyne, in his Hospital Reports, makes very frequent mention of crises, marked by rigors succeeded by sweats. He noticed this termination of the fever much oftener during some periods than in others. Thus he says that, between the 12th and the last of May, 1817, amongst fifty-nine patients admitted into the Hardwicke Hospital, there were twenty instances of this form of critical resolution, although, previous to this time, he had good reason to think that such a termination was exceedingly rare. "The rigor of crisis," as Dr. Cheyne calls it, he says rarely lasts long; perhaps only a few minutes, perhaps half an hour or an hour. Another form of crisis is thus characterized by the same accurate observer: "A state of restlessness and anxiety, with flushing of the face, rapid pulse, frequent, laborious breathing, and increased heat of the surface, with great distress at the pit of the stomach from heat, tenderness, or pain; which distress was not unfrequently relieved by vomiting. The patients were in a state of universal uneasiness,

[1] Trans. of Phys. of Ireland, vol. i. p. 299.

which would have been truly alarming had we not known its tendency; but this state is well understood, even by the servants of a Fever Hospital, who soon come to know by these symptoms that the patient is near '*the cool.*' This state sometimes lasted for the greater part of a day, during which time one of our experienced nurses, who was fond of figurative language, would generally remark that '*the cool was hovering round*' the patient."[1] Whatever was the form of this "*salutary effort,*" it was generally completed by a warm perspiration flowing from the whole surface of the body. Dr. Cheyne enumerates many other occasional modes of crisis, which seem to have consisted merely in the occurrence of some more or less striking symptom, such as diarrhœa or expectoration, or a simple chill, just preceding or at the commencement of convalescence; and concludes the subject by saying that, in many instances, he could not discover any critical effort, the disease gradually terminating, as some of the older authors have remarked, by "*insensible resolution.*"

Dr. Stewart, of Glasgow, in reference to this subject, says: "All that I insist upon is the frequent, I may say the common, occurrence of a perceptible crisis, or what is vulgarly termed *a turn* in typhus. I think I may appeal to the experience of every physician, and more especially of every resident clerk in a fever hospital—for they have more constant opportunities of observation—whether they have not often been struck at seeing, during their morning visit, the glassy eye, the haggard features, the low, muttering delirium, the stupor approaching to coma, the tremor, the subsultus, the carphology, the rapid, thready, tremulous, and intermittent pulse, of the previous evening; the formidable array of symptoms, in short, which seemed to indicate a speedy and fatal termination, exchanged for the clear eye, the intelligent countenance, the steady hand, the comparatively slow and firm pulse, and the returning appetite of approaching convalescence. To such cases as these, we might almost apply the Scripture phrase, 'At such an *hour*, the fever left him;' and if the crisis is not *very* frequently so marked, we can, in the great majority of cases, point with precision at least to the *day* on which amendment began to take place."[2]

[1] Dub. Hosp. Rep., vol. ii. p. 17.

[2] Edinburgh Med. and Surg. Journal, Oct. 1840.

The following is Hildenbrand's description of the stage of the disease, immediately succeeding to the crisis. It constitutes his seventh period. "The first striking symptom that disappears is the delirium. The patient awakes, as it were, from a dream, or a fit of intoxication; his head becomes free, and in some instances he has an instantaneous and perfect recovery of his former knowledge. The memory, however, is still peculiarly affected; so much so that the patient has great difficulty in recalling to mind the circumstances that passed before and during his illness. The mind also experiences a considerable change, and the indifference which was previously observed in the patient now begins to disappear. The eye becomes more attentive and expressive; surrounding objects begin to excite an interest, and the patient takes more notice of what is going on; the insensibility of the soul is dissipated; and the feelings of gratitude, of love, and of friendship, as well as of every other sentiment of the soul, are gradually awakened and displayed in the most exalted degree.

"While the nervous system resumes its ordinary functions, and the locomotive powers become more energetic, the functions of the circulation are re-established, and the pulse becomes calm, regular, and open, though it is frequently weaker than in the preceding stages of the disease; the heat and perspiration of the body become mild and uniform; the thirst completely disappears, and the drinks which formerly afforded so much comfort to the patient now become disgusting."[1] Hildenbrand also notices particularly the extreme muscular debility which accompanies this stage of the disease.

Sec. III.—*Sequelæ.* Typhus fever is not often followed by chronic affections which can be referred to the previous disease. Dr. Cheyne and some others speak of an occasional case of phthisis, chronic rheumatism, hydrothorax, and so on, as amongst the sequelæ of typhus fever; but the general testimony of the Irish physicians is against the frequency of such results. This is very striking in the Reports from many districts of the country, which are published in Barker and Cheyne's account of the epidemic of 1817, 1818, and 1819. They almost all agree in saying that the disease rarely left any dreg behind it.

[1] Gross's Hildenbrand, p. 52.

Sir Gilbert Blane noticed that ships arriving in the West Indies, from England, with their men suffering from typhus, were more liable than others to extensive visitations of dysentery.[1]

SEC. IV.—*Relapses.* The statements of British writers in regard to the frequency of relapses are quite contradictory. In most of the communications contained in Barker and Cheyne's history of the epidemic of 1817, 1818, and 1819, relapses are stated to have been of very frequent occurrence. At Cork, the number of persons who relapsed was estimated at two thousand. At Waterford, the relapses amounted to one-fifth or one-sixth of the whole number of the sick.[2] This tendency to relapse was most striking during the latter period of the epidemic. It would seem to exist during certain periods, and to be absent during others. Dr. Stewart says that, however long may be the period of excitement, however long the adynamic stage, however tedious the period of convalescence, he has never, amongst thousands of cases, seen a single case of relapse, in the proper sense of the term, after the symptoms had begun to decline.[3] Dr. Edward Percival says that relapses were extremly rare at the Hardwicke Fever Hospital; while Dr. Pickels speaks of them as common, though mild, at Cork. Dr. Alfred Hudson, in his elaborate Inquiry into the sources and mode of action of the Poison of Fever, informs us that, in five hundred cases of fever admitted into the Navan Hospital in 1840, only two instances of true relapse occurred.[4] These differences of statement may depend, in part at least, upon relapsing fever having been confounded with typhus.

[1] Obs. Dis. of Seamen, p. 356.
[2] Barker and Cheyne's Account, etc., vol. i. p. 439.
[3] Edinburgh Med. and Surg. Journ., Oct. 1840.
[4] Dunglison's Medical Library.

# CHAPTER VII.

## MORTALITY AND PROGNOSIS.

THE average mortality of typhus fever, deduced from large or considerable numbers, like that of most other epidemics of a grave character, differs very greatly in different seasons and localities. Before proceeding to estimate the elements of our prognosis in individual cases, I will endeavor to ascertain, as nearly as our materials will allow this to be done, the general rate of mortality in this disease, and some of its variations under different circumstances.

It is estimated by Drs. Barker and Cheyne, in their admirable history of the great Irish epidemic of 1817, 1818, and 1819, that the number who suffered from typhus fever in that country, between the commencement of the first-mentioned year and the middle of the last, embracing a period of only two and a half years, amounted to *fifteen hundred thousand;* and that the aggregate number of deaths was *sixty-five thousand*, making the average mortality one in *twenty-three.* The number of patients received into the Cork Street Fever Hospital, of Dublin, between the 14th of May, 1804, and the 5th of January, 1816, embracing no remarkable epidemic period, was twenty thousand two hundred and seventy-eight. The highest mortality was one in ten, in the year 1805 ; the lowest was one in nearly twenty, in the year 1815 ; and the average mortality, for the entire period, was about one in fourteen. Dr. O'Brien, in the Report from which these results are obtained says, that the hospital necessarily received an undue proportion of grave and dangerous cases; so that the rate of mortality amongst fever patients was somewhat higher in the hospital than in the city at large.[1] The whole number of patients received into the several fever hospitals of Dublin, from the 31st of August, 1817, to the 1st of October, 1819, was forty-

[1] Trans. of Phys. of Ireland, vol. i. pp. 446, 461.

one thousand seven hundred and seventy-five; and the deaths, during this period, were one thousand nine hundred and seventy-one; making the rate of mortality one in twenty-two, nearly.[1] The highest rate, for any single quarter, was one in fifteen; the lowest, for any single quarter, was one in thirty-two. The average mortality, during the same epidemic, in the South Fever Asylum at Cork, was one in twenty-five.

The influence of age, sex, season, and the condition and constitution of the patient, upon the danger of the disease, and upon our consequent prognosis, constitutes an interesting and important subject of inquiry.

Typhus, like typhoid fever, is less severe and fatal in early than in middle life. Dr. Percival says that, amongst the children who were timely removed from the crowded apartments of the Bedford Asylum, to the cool and ventilated wards of the hospital, and who were properly treated, the fever seldom continued longer than seven days in any case, and hardly ever proved fatal.[2] Dr. Baker observes that very few children became the victims of the epidemic in the years 1817 and 1818. Amongst the numerous cases of children which came under his care, he recollects but one which terminated fatally; and in that instance, death was occasioned by the supervention of another disease.[3] Dr. John Cheyne says of the fever of 1818, at the Hardwicke Hospital, that persons under twenty-five years of age had the disease mildly. This influence of age upon the mortality of typhus fever is placed in a very clear and striking light by the statistical researches of Dr. Mateer. I copy the following table from a paper of his, in the tenth volume of the *Dublin Journal of Medical Science*, exhibiting the effects of age upon the mortality of the disease, at the Belfast Fever Hospital, from September, 1817, to May, 1835.

| Age. | No. of Cases. | Deaths. | Mortality. | |
|---|---|---|---|---|
| From 1 to 5 years | 301 | 12 | 1 in 25 1/12 | Admitted, 5214; died, 151; being a mortality of nearly 3 per cent., or 1 in 34 84-151. |
| " 5 to 10 " | 979 | 13 | 1 in 75 4/13 | |
| " 10 to 15 " | 1709 | 36 | 1 in 47 17/36 | |
| " 15 to 20 " | 2225 | 90 | 1 in 24 45/90 | |
| From 20 to 25 " | 1384 | 74 | 1 in 24 5/37 | Admitted, 3747; died, 301; being a mortality of 8 per cent. and a fraction, or 1 in 12 135-301. |
| " 25 to 30 " | 1033 | 81 | 1 in 12 9/11 | |
| " 30 to 35 " | 677 | 70 | 1 in 9 47/70 | |
| " 35 to 40 " | 553 | 76 | 1 in 7 41/76 | |

[1] Trans. of Phys. of Ireland, vol. iii. p. 456.

[2] Ibid., vol ii. p. 572.

[3] Ibid., vol. i. p. 288.

| Age. | No. of Cases. | Deaths. | Mortality. | |
|---|---|---|---|---|
| From 40 to 45 years | 418 | 82 | 1 in $5\frac{1}{8}$ | Admitted, 1043; died, 216; being a mortality of nearly 21 per cent., or 1 in 4 179-216. |
| " 45 to 50 " | 302 | 60 | 1 in $5\frac{1}{30}$ | |
| " 50 to 55 " | 188 | 45 | 1 in $4\frac{2}{45}$ | |
| " 55 to 60 " | 135 | 29 | 1 in $4\frac{11}{29}$ | |
| From 60 to 65 " | 86 | 31 | 1 in $2\frac{54}{31}$ | Admitted, 171; died, 60; being a mortality of 35 15-171 per cent., or 1 in 3 nearly. |
| " 65 to 70 " | 36 | 12 | 1 in 3 | |
| " 70 to 75 " | 25 | 11 | 1 in $2\frac{3}{25}$ | |
| " 75 to 80 " | 24 | 6 | 1 in 4 | |

Results very similar to the above are shown by an examination of the cases received into the Royal Infirmary of Dundee, in 1836 and 1837.

It has been very generally observed, amongst the hospital patients in Ireland and Scotland, that the rate of mortality is much influenced by the period of the disease at which the patient is received; it being much less in those cases that are received in the early than in those that are received in the late stages of the fever. This may depend in part upon the circumstance that the severity of these cases, sent late to the hospital, would be likely to be greater than that of the general average. This influence is very well shown by the following calculation, made by Dr. Mateer, and founded upon a grand total of 9588 patients, treated in the Belfast Fever Hospital, during a series of seventeen consecutive years.

| Day when admitted. | 2d | 3d | 4th | 5th | 6th | 7th | 8th | 9th | 10th | 11th | 12th | 13th | 14th | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No of cases. | 544 | 1081 | 1669 | 1106 | 927 | 594 | 1067 | 302 | 539 | 187 | 247 | 167 | 750 | 9588 |
| No. deaths. | 13 | 41 | 82 | 52 | 39 | 40 | 112 | 30 | 57 | 13 | 25 | 7 | 150 | 664 |
| Ratio of mortality per cent.; fractional Nos. omitted. | 2 | 3 | 4 | 4 | 4 | 6 | 11 | 10 | 10 | 6 | 10 | 4 | 20 | |

It has been observed as a general rule, in Ireland, that the mortality is considerably greater amongst men than it is amongst women. During certain periods, and in given localities, this difference is very obvious. Thus, at the Cork Street Fever Hospital, Dublin, in 1817 and 1818, the rate of mortality amongst the males was one in sixteen; while amongst the females it was only one in twenty.[1] During the same epidemic, however, at Cork, the mortality in the South Fever Asylum was, amongst

[1] Trans. of Phys. of Ireland, vol. ii. p. 568.

males, one in twenty-eight and a half, and amongst females one in twenty-three.[1] During a period of eighteen consecutive years, from 1818 to 1835, at the Belfast Fever Hospital, the ratio of deaths was, for females, one in fourteen, nearly; and for males, one in seventeen.[2] The rate of mortality in the Royal Infirmary of Dundee, omitting fractions, in 1836 and 1837, was for females, one in eighteen; and for males, one in eleven. It ought however to be remembered, in partial explanation of this difference, that, in many places, the average age of the female is less than that of the male patients. Barker and Cheyne say: "We believe that at all times fever, particularly when it assumes a severe form, is more fatal to men than to women."[3]

Although the poor are very much more subject to typhus fever than the rich, and those who are well provided with the material comforts and luxuries of life, it is a singular fact that the disease, when it does occur in the latter class, is more severe and dangerous than when it occurs in the former. The testimony of the Irish physicians to the truth of this circumstance is almost unanimous. Old Rutty, in speaking of the great epidemic of 1740 and 1741, says: "*The poor, abandoned to the use of whey, and God's good providence, recovered; while those who had generous cordials, and great plenty of sack, perished.*" Barker and Cheyne say: "In every part of the country, fever was reported to have been much more fatal amongst the upper than the lower classes."[4] Of eleven physicians at Cork, who had the disease in 1819, four became its victims. At Waterford, at Fermoy, and at Cork, the mortality amongst the upper classes ranged from one-third to one-fourth of the whole number attacked.[5] The mortality amongst the young physicians attached to the New York hospitals has been very great.

Mental anxiety and distress seem to predispose to a grave form of the disease. The Irish writers have generally observed that fathers of families, and others, whose character and circumstances in life were such as to occasion great depression of spirits, and apprehension for the future, were more subject to severe and dangerous attacks than those of a different temperament, and in different situations. Dr. Bracken, of Waterford, says: "In the

[1] Trans. of Phys. of Ireland, vol. iii. p. 230.
[2] Dublin Journ. of Med. Science, vol. x. p. 40.
[3] Account, etc., vol. i. p. 90. [4] Ibid., vol. i. p. 95. [5] Ibid., p. 435.

winter and spring of 1806–7, the attention of the writer was forcibly directed to the fatal effect of fever on the fathers of families. Several families with fever were admitted during that period into the Royal Infirmary of Edinburgh, of which the heads, almost without exception, became victims, while the rest escaped. Similar coincidences have since that time been repeatedly observed by him. Scarcely any medical person needs to be informed that the age, habits, probably bad, or diseases derived from them, together with the greater mental anxiety and solicitude, naturally belonging to persons in this relative situation in life, must materially enter into the prognosis in all cases, and frequently have the worst effects on the termination of the disease."[1] Dr. Edward Percival remarks that "fevers which had been preceded by great bodily fatigue and mental anxiety were uniformly hazardous." Dr. Pickels says: "The disease was very fatal amongst the old, and those who were debilitated by previous diseases, especially asthma. Of six or seven blacks who had the fever in Cork, all died but one." Dr. Arrott, of Dundee, thinks that, of all circumstances increasing the danger and mortality of typhus, the previous habitual use of intoxicating drinks is the most powerful.

Barker and Cheyne say: "It is a general remark that epidemic diseases are most fatal on their invasion; and in conformity with experience we find that the late epidemic fever—that of 1817, 1818, and 1819, was most mortal at its commencement. This is proved by reference to various documents. Thus it appears, from a tabular view of the admissions to the Fever Hospital in Cork Street, that the mortality decreased from 62 in 1000, to 31 in 1000."[2] A similar difference was observed in the epidemic of 1800 and 1801.

Our prognosis in individual cases must depend upon a careful appreciation of all the foregoing circumstances, and especially upon the degree of severity of a certain number of the symptoms. Great prostration of strength at an early period of the disease, profound coma, and dark purple or livid petechiæ, are amongst the most unfavorable symptoms. Dr. Gerhard says that, in the Philadelphia epidemic, when the stupor was extreme, so as almost to amount to coma, the prognosis was nearly always fatal. Dr.

[1] Barker and Cheyne's Account, etc., vol. i. p. 198. [2] Ibid., vol. i. p. 88.

Edward Percival says: "The worst symptoms of fever are pervigilium, tympany, singultus, and coma; the most favorable in all cases are sleep, a moist tongue, and solvent bowels; a deficiency of urine is also an unfavorable sign, and its suppression very commonly a fatal one. When the patient lies at ease on his side, and especially if he is observed to relieve himself by spontaneous changes of position, after the fever is much advanced, the augury is favorable; on the contrary, when he continues extended and supine, lethargic and muttering, the prognostic is adverse."[1] Dr. Bateman speaks thus of the tongue: "The most important indications afforded by the appearance of the tongue are perhaps to be deduced from its changes; that is, from its tendency to return to the natural state, whatever the character which it usually maintains throughout may be. If the clammy tongue becomes cleaner, the parched one begins to lose its shining appearance, and to exhibit its papillæ surrounded with moisture, or the crust of the coated one to soften and loosen, we may generally anticipate a favorable change in the other symptoms, if it have not at the same time occurred. Perhaps we may with equal confidence prognosticate favorably of the issue of a fever, in which the tongue retains much of its natural appearance in the midst of many untoward symptoms; a circumstance which not very unfrequently occurs. The same observation, I believe, is applicable to the pulse; and when both these favorable symptoms concur, that is, when the tongue is moister and cleaner, and the pulse less frequent and softer, than the severity of other symptoms would lead us to expect, we commonly see the patient recover, though the general indications of danger may be extremely great."[2] "It is a consoling symptom," says Hildenbrand, "when the tongue, which was before dry and parched, becomes in the least moist and supple."[3]

Amongst the circumstances to be considered, in the prognosis of individual cases, are the amount and the character of the eruption, the danger of the disease being somewhat in proportion to the abundance and the dark color of the spots. Dr. Henderson found the mortality amongst those with an abundant eruption to be one in five; while amongst those with a scanty eruption, it was

[1] Trans. of Phys. of Ireland, vol. i. p. 296.
[2] Succinct Account, etc., p. 43. [3] Gross's Hildenbrand, p. 107.

one in eight and a half, nearly. Of Dr. Stewart's one hundred and thirty-nine cases, the eruption was universally copious in ninety-six, and the rate of mortality was one in five; it was partially copious in thirty-two, and the rate of mortality was one in six and four-tenths; it was scanty in eleven, amongst whom there was only one death. Of fifty-nine cases, wherein the eruption was light-colored, the deaths were one in twelve, nearly; while of eighty cases, wherein it was dark-colored, the deaths were one in four nearly.[1]

Dr. Henderson found, at the Royal Infirmary of Edinburgh, in 1838 and 1839, that *subsultus tendinum*, to any considerable extent, was almost always followed by death.[2]

Dr. Graves, in a paper published in the *Dublin Journal* for July, 1838, speaks of contraction of the pupil as a very unfavorable sign in typhus. He says: "In fever with cerebral disease, one of the most alarming symptoms is marked contraction of the pupil; and were I called to a case in which every other symptom was favorable, but great contraction of the pupil was present, I would say that it was a case of extreme danger. A tendency to even moderate contraction of the pupil is a very dangerous symptom in typhus; but a pupil extremely and permanently contracted, or, as it has been called, a *pinhole pupil*, is or used to be a fatal sign."

Heat of the skin, according to the observations of Dr. Cheyne, would seem to be rather a favorable indication than otherwise. He found that, amongst two hundred and fifty patients who were admitted to the Hardwicke Fever Hospital in the spring and summer of 1817, and in whom the temperature of the skin was ascertained on the day of admission, the rate of mortality was larger in those where the temperature was low than in those where it was high. Amongst eighty-three of these patients, in whom the temperature ranged from 98 deg. to 100 deg. Fah., inclusive, there were seven deaths, or one in twelve, nearly; amongst one hundred and twenty-seven, in whom the temperature ranged from 101 deg. to 104 deg. Fah., inclusive, there were five deaths, or one in twenty-five; and amongst forty, in whom the temperature ranged from 105 deg. to 109 deg. Fah., inclusive,

[1] Edin. Med. and Surg. Journ., Oct. 1840.

[2] Ibid., vol. lii. p. 434, Oct. 1840.

there was only a single death. "It was not uncommon," says Dr. Cheyne, "to find the thermometer gradually rising from 98 or 99 deg. to 102 or 103 deg., or even higher, while the severity of the disease was abating; and, on the other hand, we frequently observed the temperature declining while the patient was getting worse; thus the patient was often in great danger when the temperature of the body did not exceed 98 deg. In some instances, for a day or two before death, the mercury did not rise above 96 or 95 deg. Indeed, in severe cases, after the temperature fell to par or below it, and that without any critical effort, we considered its rising again as a favorable change. In examining the disordered state of the vital functions, he adds, during the summer of 1817, with a view to the prognostics of continued fever, we derived more information from the state of the breathing than from the pulse, and more from the pulse than from the temperature of the body."[1]

[1] Dub. Hosp. Reports, vol. ii. p. 18, *et seq.*

# CHAPTER VIII.

## DIAGNOSIS.

I cannot conclude this Essay on Fevers, without taking notice of the very great difference there is between the *putrid malignant* and the *slow nervous fever*; the want of which distinction, I am fully persuaded, hath often been productive of no small errors in practice, as they resemble one another in some respects, though very essentially different in others. JOHN HUXHAM.

It is plain that there are at least two species of continued fever, both in Europe and this country, and further researches may very possibly show more.
JAMES JACKSON.

TYPHUS fever may be confounded with various other diseases; with pernicious intermittent or remittent fever, with some cerebral affections, with typhoid pneumonia. The most important point, however, in connection with its diagnosis, is that which refers to its relations to *typhoid fever*. It may be remembered that, in my observations upon the general diagnosis of the latter disease, I alluded to this subject, and expressed the opinion that the two affections constituted *radically dissimilar fevers*, with the further remark that this question could be best considered after the natural history of both diseases had been given. We are now prepared to enter upon this particular matter, and to establish, as far as this can be done, the differential diagnosis of the two fevers. There is, however, one preliminary remark which ought to be made here, and that is, that even if we should come to the conclusion, as a question of strict scientific and philosophical nosology, that these two affections are essentially and fundamentally alike; that they are forms merely of one individual disease, *it would still be hardly less important that we should be able to distinguish between them as forms or varieties of disease. In a practical point of view, the necessity of an accurate diagnosis is not removed, even by the conclusion which I have supposed.* These forms of fever, if we choose so to consider them, are still so distinctly marked; they differ, in many respects, so

constantly and so widely from each other, that their diagnosis is none the less important than it would be under the other supposition, that they are essentially dissimilar diseases. After pointing out their principal points of resemblance and of dissemblance, I will endeavor to exhibit, as fully and as faithfully as I can, the present state of the question in regard to their identity or non-identity, by a reference to the opinions and the investigations of those observers who have paid especial attention to this subject, constituting as it does one of the most interesting and important which is now occupying the attention of medical men.

Sec. I.—*Symptoms.* In their mode of access, typhoid and typhus fevers, in many instances, very nearly resemble each other. It is pretty evident, however, that, as a general rule, the access of the disease is more gradual in the former than it is in the latter: typhoid fever creeps on treacherously and obscurely more frequently than typhus does; and the latter makes its onset suddenly, and without any lingering premonitions, more frequently than the former does. The seizure of the typhoid fever, in grave cases, is much more frequently accompanied with abdominal pain and diarrhœa than is that of typhus.

The chief difference between the two diseases, in regard to the strictly febrile symptoms, consists in the more pungent and burning heat of the surface which characterizes typhus. Perhaps it is more frequently the case, also, in this disease than in typhoid fever, that the temperature of the skin falls manifestly below its natural standard as the febrile excitement declines. I am not aware that there is anything in the chills, or in the character of the pulse, to distinguish the two fevers. Perhaps the latter is more uniformly soft and compressible in typhus than in its related disease, and Dr. Gerhard found it more rarely *bis-feriens*, as it is called.

The odor from the body seems to differ in the two diseases. In typhoid fever, when perceived at all, it is usually in the latter period of grave cases, and is then of a stale, cadaverous character; in typhus it is pungent and ammoniacal, more common and more striking.

The thoracic symptoms are subject to greater variety in typhus than in typhoid fever. In some seasons, they are frequent and well marked; in others, they are nearly wanting. In the former

disease, they consist generally of dulness on percussion, and feebleness of the respiratory murmur over the lower and back parts of the chest, and of loose mucous rhonchi; in the latter, of dry, sonorous, or sibilant rhonchi. The cerebral respiration is common to both fevers.

There is a pretty close correspondence in the number, the severity, and the constancy of the nervous symptoms in the two diseases. Taking in all grades of severity, they may be somewhat more constant and prominent in typhus than in typhoid fever; the pain in the head may be more intense and distressing; the stupor may be more marked; the morbid sensibility of the surface seems to be more common and striking; and the prostration of muscular strength, on the subsidence of the febrile symptoms, is more invariable and profound.

There is one other difference in regard to the existence of which I think there can be no reasonable doubt. The nervous symptoms in typhoid fever almost always creep on more stealthily and gradually than they do in typhus. This is especially true of the dulness and stupor. In the latter disease, this symptom is generally more marked and profound at the commencement than it is in the former.

In the abdominal symptoms of the two diseases there are numerous and important differences. In typhoid fever, where the affection is at all severe, there is generally spontaneous diarrhœa, with liquid, yellowish, ochre-colored stools; in typhus, there is commonly constipation; and the stools, when procured by purgatives, are often dark, slimy, or pitchy, and offensive. Hemorrhage from the bowels is not unfrequent in the former; *it hardly ever occurs in the latter disease.* Abdominal pains are often present in both fevers, but in the former they almost invariably accompany the diarrhœa; in the latter they are attended by constipation, and are relieved by cathartics. In the former they are more frequently confined to the right iliac region, accompanied by tenderness on deep pressure, and gurgling, than in the latter. *Tympanitic distension of the abdomen is very common in typhoid fever; it is very rare in typhus.*

The cutaneous eruptions, characteristic respectively of the two affections, are very unlike in many respects. In typhoid fever, the spots are pretty uniformly oval or circular, varying but little in size; often distinctly though slightly elevated; readily dis-

appearing under pressure; generally, not very numerous; confined, for the most part, to the skin of the chest and abdomen; and of a bright rose color. In typhus, they are more irregular in their shape and size; not elevated above the adjacent skin; partially disappearing under pressure, or not at all; often abundant, and even confluent; in many cases occupying the skin of the extremities as well as that of the entire trunk; and usually of a duller and more dusky color than in the former disease. Not unfrequently, also, they consist of true petechiæ, or cutaneous ecchymoses, which in fatal cases persist after death. The average period of their appearance seems to be rather earlier in typhus than in typhoid fever. The dingy color of the skin, the dusky suffusion of the face, and the dark injection of the conjunctiva, are, to a considerable extent, peculiar to typhus. Such are the principal points of likeness, and of unlikeness, in the symptoms of these two diseases. I shall now institute a similar comparison between their respective lesions.

Sec. II.—*Lesions.* There are some differences in the pathological alterations which are found in the thoracic organs in the two fevers.

The differences in the abdominal lesions in the two diseases are very striking and constant. They are so well marked, and so invariable, that they are easily stated. In typhoid fever, there is a peculiar and constant alteration of the elliptical patches of the ileum, consisting of various degrees of thickening, changes of consistence and color, and especially of ulceration. In typhus, these plates are very rarely altered, and when so at all, only to a very trifling extent. In typhoid fever, the isolated follicles both of the small and the large intestines are found to have undergone, in many cases, the same changes that occur in the aggregated follicles; in typhus, they are in a healthy condition. In the former disease the mesenteric glands, corresponding to the altered and ulcerated follicles, are reddened, softened, and augmented in volume; in the latter they are unchanged in any respect. The large intestines are usually more or less distended with flatus in typhoid fever; they are not so in typhus. The spleen is enlarged and softened in a considerable proportion of cases of both diseases, but these changes are greater and more frequent in the former than in the latter. Alterations in the thickness, color,

consistence, and so on, of the mucous membrane of the stomach and intestines are frequent but not invariable in both affections; there is nothing of any diagnostic value in their differences.

SEC. III.—*Causes.* In connection now with the causes of these fevers, there are several circumstances in which they differ very considerably from each other. Typhus, although occurring most frequently in early life, is not so exclusively confined to this period as typhoid fever is. The former attacks individuals more than forty years old much oftener than the latter does. Recency of residence in any given place, although it seems to favor the occurrence of typhus, does so much less powerfully and manifestly than of typhoid fever. The unknown causes of the latter disease connected with locality are less circumscribed, geographically, than those of the former; at any rate, they seem to be more constantly and uniformly present over more extensive regions of the earth. In other words, typhoid fever is widely and continually prevalent in many places where typhus is very rarely if ever seen. The sporadic character of the former is more marked and evident than that of the latter. Typhus prevails more frequently in an epidemic form than typhoid fever. The latter disease may be to a certain extent, and under certain circumstances, contagious; but it is much less evidently and decidedly so than the former. The connection of crowded, filthy, and poorly ventilated apartments, with the origin and propagation of typhus, is more manifest and unequivocal than with those of typhoid fever.

This latter point deserves to be much more strongly and emphatically stated than it was as above in my first edition. It seems to me to constitute a broad, unequivocal, and most striking difference between the two diseaes. Typhus fever is very intimately connected, in its etiology, with crowding, impure air, filth, and poverty; it is, to a very great extent, dependent upon these causes for its primary origin. There is no point in its natural history more positively settled than this. Many of the British writers allege that the entire removal of these causes would exterminate the disease. Now all this is entirely otherwise, so far as typhoid fever is concerned. I do not mean to say that crowding, impure air, filth, and destitution may not sometimes give rise to typhoid fever, and favor its prevalence, although there is very little evidence if any that they ever act in this manner. But I do mean

to say that, as a general rule, the disease is in no way and in no degree dependent upon these causes. In a vast majority of instances it is entirely impossible to trace any connection between them; nay, more than this, it is entirely manifest that there is no such connection. The poison of typhus fever is generated in a stagnant and depraved atmosphere, rank with the thick corruptions of concentrated emanations from the living human body;—the poison of typhoid fever, like that of epidemic cholera, and like that of scarlatina, comes we know not whence: it is generated as readily amidst cleanliness and purity as amidst filth; and it floats as freely in the fresh breezes under the open sky, as in the close and stagnant atmospheres of crowded cabins and lanes.

Sec. IV.—*Duration.* The average duration of typhus is considerably less than that of typhoid fever, and death from the former disease occurs in many cases earlier than from the latter. The termination of the disease by a more or less well-marked crisis is also much more common in the former than in the latter.

Sec. V.—*Effects of Remedies.* Finally, it is very evident, I think, that these two diseases differ from each other in the effects which are produced upon them by remedies. The immediate influence, for instance, of treatment, is much more obvious in typhus than it is in typhoid fever. General or local bleeding, when it is indicated, is more uniformly followed by mitigation or removal of local pain, especially of that of the head. So the administration of stimulants and tonics, under circumstances that call for them, is more frequently followed by a strong and manifest impression upon the morbid actions than is often seen in typhoid fever. It is pretty clear also that, as a general rule, typhus requires a more tonic and supporting treatment than the latter disease. M. Bouillaud may have failed to show that typhoid fever is more successfully treated by repeated bleedings, general and local, even at periods of the disease somewhat advanced, and independent of any special local indication, than by any other plan; but he has at least demonstrated that this treatment may be borne with a good degree of impunity. We rarely hear of the sudden and often fatal sinkings, and collapses, which have so frequently followed a single moderate abstraction of blood in the middle and later stages of typhus.

SEC. VI.—*Historical.* If this alleged and well-defined difference between typhoid and typhus fevers really exists; if these two diseases are radically and fundamentally diverse, and unlike each other, and if the diagnosis between them can be generally established, it becomes a matter not only of scientific interest, but of great practical moment, for us to inquire how far this distinction is recognized, either in form or in fact, by the leading and classical British writers, who have long been, and who still continue to be, to a very great extent at least, our guides and authority on the subject of continued fever. What do they mean by the terms *typhus fever*, *common continued fever*, *slow nervous fever*, and so on? Do they describe a single disease, essentially identical in its nature, and differing only in its form, under these several appellations? If so, what is this disease? Is it the *typhus fever*, or is it the *typhoid fever* of this book? On the other hand, do they describe distinct and separate diseases under these several appellations? If so, what are these diseases? Are they *typhoid* and *typhus fevers*, or are they something else? Certainly, I need not say how necessary it is to all sound science, and to all successful or even safe practice, that we should understand each other upon this primary and fundamental point of diagnosis. Certainly, I need not say what contradictions and what inextricable confusion must inevitably grow out of the want of this understanding. In order to determine as far as may be the questions above indicated, I will briefly examine the opinions and observations of some of those British authors whose works are most generally in the hands of our own practitioners, and whose writings have most extensively influenced their doctrines and their practice. Amongst these I may mention particularly John Armstrong, Southwood Smith, and Alexander Tweedie.

In Dr. Armstrong's "*Practical Illustrations*," there is a great deal of gratuitous generalization, and of loose diagnosis; but he nevertheless admits, very distinctly, the existence of two distinct forms of fever. One of these he calls *typhus fever;* and the other *common continued fever.* He uses the term *typhus*, he says, not, as has often been the case, to designate the combination of malignant symptoms which may take place in the last stage of any acute disease, but "to denote a specific disease, that, like the epic poem of ancient critics, has a beginning, a middle, and an end." The *common continued fever* of Dr. Armstrong is, I

think, the *typhoid fever* of Paris, and of New England. Some of the leading and prominent distinctions between the two diseases, already so fully pointed out in the foregoing pages, can hardly fail of being recognized in the following extract: "The disturbance of the sensorial functions, and the prostration of the moving powers, are remarkably characteristic of *true typhus*. In the most frequent forms of the *common continued fever*, the patient has uneasiness in the head; but he has a bright eye, and a countenance indicative of no mental depression or despondency; and he lies in a position which displays some command of muscles, and can move about the bed, or get up, with a tolerable effort. On the contrary, in genuine typhus, the eye always wants animation; the countenance has a dull, wearied, depressed, and often desponding expression, and the patient lies in a comparatively relaxed position, and moves himself more languidly, almost like one worn out by loss of sleep, and from some unusual fatigue. In the common continued fever, the patient commonly has not much inaptitude of mind, often answers questions readily, and in a pretty firm voice, without much increased agitation of the breathing; whereas, in typhus, the answers are mostly given with languid slowness and reluctance, and much speaking obviously disturbs the respiration. In the common continued fever the skin is generally of a brighter red than natural, especially on the cheeks; on the contrary, the skin is always more or less of a dusky color in typhus, and an admixture of it may be best observed in the flush of the face. This duskiness of the skin is one of the proper symptoms of typhus, and seems to arise from some change in the constitution of the blood, which I have almost invariably seen darker than in ordinary fevers. In the worst cases, the duskiness increases in the progress of the disease, and lessens in those that assume a mild aspect. So very characteristic is this cutaneous duskiness, that I think I could distinguish typhus by it at any time, if two patients were presented to me, the one laboring under that disease, and the other under the common continued fever. In typhus, the tongue has an early tendency to become brown and dry; in the common continued fever it is always white, and often even somewhat moist for the first week; in typhus, the pulse is variable as to force and frequency, but it is seldom very resisting to pressure; but in the common continued fever, it mostly resists firm pressure of the finger, from the freer

and typhus fever, but principally the latter, constituted the disease which Dr. Smith describes; and this conclusion we shall find completely corroborated by an examination of his cases illustrative of the pathology of the disease.

His general description of the lesions found after death is too loose and imperfect to be much relied upon. He speaks of the dusky color of the skin, the large purple petechiæ, and the dark color of the muscles and the internal viscera. The brain is described as usually morbid, either increased vascularity of its membranes and substance or serous effusion constituting the most common alteration. We may, however, well feel the necessity of caution and skepticism, when we find it stated, as it is, that "the pituitary gland is very constantly softened, and often in a state of suppuration." The mucous membrane of the bronchial tubes was very generally thickened, and of a dark red color. The lower portion of the small intestine is said to have been found, in many cases, more or less extensively diseased; its mucous membrane sometimes only reddened and vascular, and at others the seat of ulcerations. These ulcerations, with alterations in the mesenteric glands, seem to have been identical with the entero-mesenteric lesion which I have described as characteristic of typhoid fever. In a large number of cases, on the other hand, the intestine is said to have been free from disease. Now, the point to which I wish more particularly to refer, illustrative of the question before us, is this; *the average age of the patients constituting the two classes of cases;* those which did and those which did not exhibit, after death, the peculiar lesion of the elliptical plates found in typhoid fever. I find, for instance, that there are thirty-five cases reported of fever with prominent cerebral affection, and with *absence of intestinal ulceration; and that the average age of these cases is thirty-four years.* Of these patients there were thirteen who were over thirty-five years of age; ten of them were as high as fifty, and the oldest was sixty-five. There are eight cases reported of fever with prominent thoracic affection, and with no ulceration of the intestine. The average age of these cases is somewhat more than thirty-six years. There are three cases reported of fever with prominent abdominal symptoms, but without ulceration of the ileum, and the average age of these is forty-five years. There are eight cases reported of mixed disease, without ulceration, the average age of which is twenty-two years

and a half. *The average age of these fifty-four cases is about thirty-three years.* I find, furthermore, forty cases reported wherein the intestinal ulcerations characteristic of typhoid fever were present; *and the average age of these cases is twenty-two years and a third.* Only four of them were over thirty-five, and the oldest was fifty years of age. The bearing of this result upon the question of the existence of typhus and typhoid fevers amongst Dr. Smith's cases, and of the diagnosis between them, is too obvious to require any further remark.[1]

Dr. Alexander Tweedie's *Clinical Illustrations of Fever* were published in 1830. This work is more fragmentary in its character, and less systematic, than the treatise of Dr. Smith; but it bears many marks of sound judgment and careful observation. Dr. Tweedie seems to be very strongly impressed with the fact that different and diverse fevers prevail in London; but he has failed to point out, with any degree of accuracy or completeness, their distinguishing characteristics. His work, like that of Dr. Smith, is thus rendered almost valueless, by the fatal and fundamental defect of a want of all clear and well-defined diagnosis. This is true in relation not only to the separate kinds of fever, but also to other and widely different diseases. Thus, under the head of continued fever, we find many cases which are manifestly *not fevers of any kind.* These are instances of peritonitis, pneumonia, phthisis, and so on. Under these circumstances, and from such imperfect data, it would be worse than idle to attempt to settle the important question of the kind and character of the fever, or the fevers, which are described by Dr. Tweedie. I wish merely to remark that an examination of his cases in reference to their average age, furnishes the same singular corroboration of the correctness of the opinion which I have given in regard to the existence amongst them of both typhoid and typhus fever as has already been deduced from a similar examination of those of Dr. Smith. For instance, of fifteen cases which, as far as I can judge, seem to have been cases of fever, and in which there was no intestinal ulceration, the average age was about *forty*

[1] Dr. Reid's one hundred fatal cases have already been spoken of. There were only six of them which presented the lesion of typhoid fever; the average age of these six cases was twenty-five years; the average age of the one hundred cases was thirty-six years and a third; seventy-seven were over thirty, and forty-two were over forty.—*Edin. Med. Journ., Aug.* 1842.

*years;* while of sixteen other cases, in which the lesion characteristic of typhoid fever seems to have been present, the average age was less than *twenty-six* years.

By some of the older British physicians, however, amongst whom may be mentioned, especially, the incomparable Huxham, the difference between these two forms of fever was distinctly noticed. I have already given an extract from this writer's Essay on the *Difference between a Slow Nervous and a Putrid Malignant Fever;* in which, considering the time when it was written, and the comparatively imperfect study of diagnosis which was then common, the peculiar features of the two diseases are very well delineated.

In a letter from Dr. Darwin to Dr. Lettsom, dated Derby, October 8, 1787, the following passage occurs: "If your Society proposes questions, I should wish to offer for one, 'Whether the nervous fever of Huxham (or fever with debility, without petechiæ or sore throat, or flushed countenance, or pungent heat), be the same as the petechial fever, or jail fever?' The former of these, viz., the nervous fever of Huxham, prevails much over all the country at this time."[1]

Dr. Vaughan, also, of Leicester, in a letter to Dr. Lettsom, dated July 27, 1783, in reference to the same subject, observes: "There is surely a peculiarity in the species of fever you had the goodness to send me an account of, protracting itself to such a length as thirty-five or forty days: it certainly agrees very much with Huxham's Febris Nervosa, *which, notwithstanding Dr. Cullen, is a very different disease to the Febris Carcerum, in its attack, progress, termination, and cure.*"[2]

Contemporary with these authorities, and inferior certainly to none, is that of Sir John Pringle, who very distinctly recognizes the difference between jail fever or typhus, and the low nervous, miliary, or typhoid fever. "In the description," he says, "I have endeavored to distinguish them," i. e. malignant or pestilential fevers, "from all others, as far as I could do it in distempers whose symptoms are so much alike. The nervous fevers are frequently accompanied with miliary eruptions, which have no resemblance to the *petechial;* nor have I ever happened to see

[1] Life and Correspondence of Dr. Lettsom, vol. iii. p. 118.
[2] Ibid., vol. iii. p. 161.

miliary eruptions in this malignant kind."[1] In reply to some strictures of De Haen, he says, still more explicitly: "I have never considered the jail or hospital fever, and the miliary fever," meaning the low nervous, or typhoid, "as similar; and indeed I may venture to say that, as the symptoms of the two are so much unlike, they ought to be treated as different *in specie;* and, consequently, that neither the theory nor the practice in the one ought to be regulated by analogy from the other."[2] Again, he says: "I have, therefore, all along considered the jail or hospital fever (in regard to others, that commonly occur in these parts), as a fever *sui generis*, at least as different from either the scarlet, the miliary, or any other eruptive fevers, which are known."[3]

The strictures alluded to above, by De Haen, had reference particularly to the treatment of fever, by Huxham and Pringle. De Haen charged these great British observers with bad practice, with a too stimulating and incendiary method in the management of fever. Pringle, in his reply to De Haen, says, expressly, that the fever treated by the latter at Vienna was of a different kind from that treated by himself; and in a note to this reply, he makes the following very interesting remarks in regard to the dissimilarity of the cutaneous eruption in the two diseases. "After publishing what is above, relating to the distinction which I conceived was to be made between De Haen's *petechiæ* and mine, I was confirmed in my opinion by Dr. Huck, who in the year 1763 was at Vienna, and was favored with admittance into all the hospitals there, and in particular had the satisfaction of attending Dr. De Haen himself, and seeing with that celebrated physician, some of his patients in that very fever which he calls *petechial.* Dr. Huck examined those spots in Dr. De Haen's presence, and assured me that they had hardly any resemblance to those which I have called *petechial*, and which he himself had so often seen in the hospitals of the army; but that they were so like flea-bites, that he was apt to believe that one must be often mistaken for the other."[4] Let me add, here, that I do not know anything in the annals of medical polemics, imbued with a finer

[1] Observations on the Diseases of the Army. By Sir John Pringle. Philad. ed., p. 298.

[2] Ibid., p. 384.

[3] Ibid., p. 385.

[4] Observations on the Diseases of the Army. By Sir John Pringle. Philad. ed., p. 390.

temper, or a more philosophical spirit, than this reply of Pringle to De Haen. It is every way equal—and there is no higher praise than this—to Louis's defences against the attacks of Broussais and Bouillaud. In place, or out of place, I cannot forego the pleasure of gracing a page of my book with the following golden words from the reply of Pringle. "In fine, Dr. De Haen may be assured, that the regimen which I propose stood at first on no other foundation than experience, after my having seen the bad effects of a contrary method, whether by too large or too frequent bleedings in the beginning, or by giving hot things too early, in order to raise the pulse when it began to sink, or to force a crisis before the common period of the disease. Some of the medicines are superfluous, but I am pretty sure that none of them are hurtful. * * * But having once got into a method, which brought about as many cures as seemed otherwise consistent with the circumstances of my patients, lying in a foul air, amidst a constant noise, and often neglected by the nurses, I did not attempt to reduce my practice to more simplicity than what is mentioned. Yet, whatever confidence I may have in the directions which I have published, I am still ready to alter any part of them, upon a fair representation from those who have had equal opportunities with myself of seeing and treating this fever. But to oppose either mere theory or analogy from other fevers, where the similarity is so disputable, or to oppose some general maxims from Hippocrates or Sydenham to the observations which I have offered as the result of a long and painful experience in a distemper that no physician could well know but in such circumstances as mine, is a manner of writing, I must say, more fitted for disputations in a school of medicine than for the instruction of a practical physician."[1]

Dr. Macbride, of Dublin, says that the "*Putrid Continual Fever*, before Dr. Langrish's[2] time, was confounded with the nervous; but though both nervous and inflammatory fevers, towards the close, often show that by that time the crasis of the blood is destroyed, yet we are not to confound them with this," the putrid continual, "wherein, from the very beginning, there is some pecu-

[1] Observations on the Diseases of the Army. By Sir John Pringle. Philad. ed., p. 395.

[2] "The Modern Theory and Practice of Physic, by Browne Langrish, M. D., Lond. 1735."

liar acrimony, which dissolves the bond of union among the insensible particles, and allows them to run into combinations opposite to the mild, smooth, and emollient nature of blood in the healthy state."[1]

Dr. Willan, in speaking of the contagious typhus of London, in 1799, says: "To this contagious fever, alone, Dr. Cullen ought to have applied the denomination of typhus mitior; he has improperly comprised under it the slow or nervous fever, described by Huxham and Gilchrist, which may rather be considered as a species of hectic, and is not received by infection."

Dr. James Sims, of the county of Tyrone, Ireland, although disposed to doubt the existence of the distinctions between the slow nervous and the putrid fever, insisted upon by Huxham, still says: "I would not by this be understood to mean that there is no difference in reality between a low nervous fever, as it is called, and a putrid malignant one; I am well aware that there is; but am afraid that, in the last stage of the nervous one, as described by Dr. Huxham, a change is brought about by his treatment of it that he little suspects, which is its degenerating into a truly putrid malignant fever in nothing distinguishable from the other described under that appellation."[2]

In the 4th volume of the *Edinburgh Medical Essays and Observations*, 1734, there is an Essay on Nervous Fevers, by Dr. Ebenezer Gilchrist, of Dumfries. The disease described by Dr. G. is evidently typhoid fever. "*I take this fever*," he says, "*to be very different in its nature and changes from other fevers.*"

In a continuation of the same essay, in the 6th volume, Dr. G. thus describes the disease. "The fever runs out to the twentieth, twenty-fifth, thirtieth, and sometimes to the thirty-fifth day. The symptoms upon seizure are generally such as are common to all fevers—coldness, trembling, and frequent alternations of heat and cold, nausea, headache, and vomiting; while at other times it draws on more insensibly. * * * From the seventh or eighth day, sooner or later, a delirium comes on, which is constant, and lasts through the fever, but for most part is not very high; the tongue is black, chapped, and parched. The sick are faint, highly

[1] A Methodical Introduction to the Theory and Practice of Physic. By David Macbride, M. D. London, 1772, p. 824.

[2] Med. and Phys. Journ., vol. ii. p. 412.

[3] Obs. on Epid. Dis., p. 248, 1776.

dispirited, sigh heavily, and, when the fever is vehement, have a nervous or intercepted breathing. * * * A symptomatical looseness, or deafness, or both, accompany it to the end. What deserves a serious consideration, is the frequent hemorrhages or bloody appearances that happen. I have known them bleed four or five pounds by the nose in a few hours: bloody or sanious stools, and very fetid, are observed. * * * Seldom do they die soon in the disease, though it has been fatal before the fourteenth day." * * * "The disease, before it makes its attack, gives sufficient warning sometimes. Two or three weeks before they are laid down, they are low-spirited, inappetent, loaded, sleep ill, sigh frequently, groan involuntarily, and feel inexpressible disorder, accompanied with great fear, concern, and dejection, and perhaps, slight alienation of mind." The essay is long and tediously stupid, with *à priori* reasonings.

Twenty-five years ago, an interesting paper was published in the *Edinburgh Medical and Surgical Journal*, by Dr. Autenrieth, Jr., on the *Sporadic Abdominal Typhus of Young People*, as the disease showed itself in the south of Germany. The difference between it and the typhus is distinctly recognized; although, as the author remarks, the two diseases had generally been confounded. Dr. Autenrieth, Jr., says expressly, and in so many words, that the disease which constitutes the subject of his essay is essentially distinguished from typhus; by arising independently of any contagion; by the particular time of life in which it spontaneously occurs; and by the seat of the complaint being in the abdomen, rather than the brain. Amongst the symptoms which the author enumerates, and which show very clearly its identity with typhoid fever, and its difference from typhus, are watery diarrhœa, abdominal pains, tympanites, and epistaxis. Dr. Autenrieth's sketch of the disease was written from memory, while he was residing in Edinburgh, and at the close of his paper, he refers to a more exact and comprehensive description of the disease, to be expected from the hand of his father. "If," he says, in conclusion, "by the present attempt, I should be so happy as to excite the attention of the British medical profession to the knowledge and cure of this disease, I entertain the hope that, in a short time, the science may be enlarged, and my design completely attained." It is not a little remarkable that the attention of British observers should have been especially called to this

particular subject—the distinctions between these two forms of fever—fourteen and sixteen years subsequent to the publication of Dr. Autenrieth, Jr.'s, paper, by two other young continental physicians—Dr. Lombard, of Geneva, in 1836; and Dr. Staberoh, of Berlin, in 1838.

I shall now give a summary of the investigations which have been made, and of the opinions which have been advanced, in regard to this very important question, during the last few years.

Dr. E. Hale, Jr., of Boston, in a paper on the typhoid fever of New England, published in the *Medical Magazine* for December, 1833, speaks very decidedly of the want of correspondence between the descriptions of typhus, given by Dr. Armstrong and Dr. Southwood Smith, and the phenomena presented by the common fever of our own country. These phenomena, he says, are "*widely different*" from those enumerated by the foregoing writers, as characteristic of the typhus which they describe; but whether this want of likeness depends upon various modifying circumstances connected with the prevalence of the disease in the two countries, or upon an "*intrinsic difference*" in their nature, he does not stop to inquire.

The *Dublin Journal of Medical Science*, for September, 1836, contains two short letters, written by Dr. H. C. Lombard, of Geneva, and addressed to Dr. Graves, on the relation of the *typhus fever* of Britain to the *typhoid fever* of the Continent. Dr. Lombard had for six years been familiar with the latter disease in France and in Switzerland, and, in the fatal cases, had invariably found the peculiar lesion of Peyer's glands. On Dr. Lombard's arrival in Glasgow, in 1836, he was allowed by his friends to examine the body of a fever patient, in whom he had said no doubt could exist as to the presence of follicular disease. He was not a little astonished at finding the elliptical plates wholly unaltered. On his arrival in Dublin, he was again furnished with an opportunity of making two similar examinations —one at the Meath, and one at the Hardwicke Hospital—and here again he was disappointed in not finding any lesion of the elliptical plates. Dr. Lombard alleges that he found the symptoms of the British typhus almost identical with those of the typhoid fever of the Continent, but he immediately proceeds to mention the great difference in the appearance of the eruption in the two diseases, or forms of disease, the frequent occurrence

of typhus in old subjects, the absence of prominent abdominal symptoms, and its strongly-marked contagious character. He does not speak very positively upon the subject, but is unwilling to admit that the two diseases are specifically distinct.

Dr. Lombard, on his way home, visited the Fever Hospitals of Liverpool, Manchester, Birmingham, and London; and on his arrival in Geneva, wrote a second letter to Dr. Graves, bearing date about one month subsequent to his first communication. At Liverpool, Manchester, and London, he found the same state of things as he had seen in Dublin and Glasgow; prominent cerebral symptoms, an abundant cutaneous eruption, infrequency of abdominal disorder, many patients of advanced age, and strong evidences of the contagious character of the fever. It does not appear that he witnessed any autopsies anywhere in England. At Liverpool, he was told that ulcerations of the ileum and cœcum were occasionally but by no means constantly met with, and that their frequency varied in different seasons. At Manchester, he was informed, merely, that the ulcerations of the intestines were by no means always to be found in the fatal cases. At Birmingham, he saw no patients, but was told by the medical attendants of the fever wards in the General Infirmary, that, in examinations, after death, ulcerations of the lower part of the ileum were always present. At the London Fever Hospital, he saw but very few patients, but concludes, from Dr. Tweedie's researches, that ulcerations in the lower part of the ileum are not to be found in more than one-fourth of the fatal cases, and that their frequency varies with different seasons; it being much greater in autumn than at any other period of the year.

This constitutes the whole sum and substance of Dr. Lombard's personal knowledge of the typhus fever of Great Britain. In his second letter, he expresses, very decidedly, the opinion that there are two distinct and separate fevers prevalent in Great Britain; one of them identical with the *contagious typhus, the army and jail fever* of the French pathologists; the other a sporadic disease, identical with the *typhoid fever*, or *dothinenteritis*, of the French. He considers Ireland as the source of the former disease; and supposes it to be carried by the Irish, in their annual migrations, to the several large towns and cities of the sister island.[1] In

[1] As an offset to this opinion it may be remarked that Dr. Barker, many years ago, attributed the great increase in the prevalence of fever which took place

Glasgow, it constitutes, he says, one-third of the total number of fever cases; in Dublin, much less; and in London, one-fourth; these proportions varying in different seasons, but being greatest in autumn.

Many of the suggestions contained in these letters were, at the time when they were made, exceedingly important; and it seems somewhat singular that they should not immediately have received a greater degree of attention from British observers. The conclusions, however, in regard to the exact degree of proportion in the prevalence of the two fevers, or forms of fever, in different cities of Great Britain, and in regard to the exclusive origin of typhus in Ireland, and its subsequent diffusion through Scotland and England, are, to say the least of them, premature and gratuitous. This precipitancy of judgment would seem to be a prominent characteristic of Dr. Lombard's mind; for we find him, in 1839, imagining that he had demonstrated the existence of a new disease, a true *bilious fever*, differing both from typhoid and from the bilious remittent fever, from this worthless and utterly inadequate evidence—the occurrence of two cases of prolonged bilious vomiting and purging, one of them in a female seventy-four years old, the other in a female fifty-eight years old, both terminating fatally; in only one of which was there an examination of the body, and in this no apparent lesion of any of the organs![1] In the 48th volume of the *Edinburgh Medical and Surgical Journal*, there is a very interesting notice of several papers, by recent German writers, on the abdominal typhus of that country, in which the question of the identity of this disease, clearly and manifestly typhoid fever, with the true British typhus is at least admitted to be a legitimate subject of doubt, and of further investigation. Macculloch insists very strongly that the typhus mitior of Cullen, the low, nervous fever, as it is commonly called, is essentially different from true contagious typhus.[2]

One of the most important documents in the history of this investigation is the paper of Dr. Gerhard's, to which reference has been so frequently made. The leading facts contained in that paper, so far as they bear upon the question before us, have already been embodied in the preceding account; it can be hardly neces-

throughout Ireland, during and after the year 1810, to its introduction from the Continent by the return of the Walcheren troops, and in other ways.

[1] Gazette Médicale, March, 1839. [2] Macculloch on Marsh Fever, p. 35.

sary, therefore, to repeat them here. It is enough to say that the disease observed by Dr. Gerhard, and Dr. Pennock, prevailed somewhat extensively, there having been admitted to the hospital with it, between March and August, 1836, nearly two hundred and fifty patients; that it corresponded very exactly *in its symptoms* to the true typhus; that it was clearly transmissible by contagion; and that the elliptical plates and the mesenteric glands were found uniformly free from the lesion of typhoid fever. Dr. Gerhard and Dr. Pennock had both been familiar with the latter disease, and they were struck with the wide difference between it and the typhus of 1836; and to them belongs the credit of having first fully pointed out, and clearly established, the most prominent and essential points of dissemblance between the two diseases.

Dr. Staberoh, of Berlin, after four or five years' study of continued fever in Vienna and Paris, and after passing six months in Great Britain, where he had extensive opportunities for observing both typhus and typhoid fever, adopted the doctrine of the specific difference between the two diseases.[1]

Mr. Henry Kennedy, in a paper contained in the *Dublin Journal* for March, 1838, says that while his mind was in a state of suspense, in regard to the conflicting opinions of the French and British pathologists, as to the connection between intestinal lesions and continued fever, an opportunity was presented to him of seeing the common fever of Paris and of Geneva; and to his surprise he found it in many particulars different from the typhus of his own country. Two years of subsequent uninterrupted study of the subject convinced him "that the fevers of the two countries are of different types, and that typhus may in the great majority of instances be distinguished from the gastro-enteric fever of the French."

In the early part of 1839, Dr. George C. Shattuck, Jr., of Boston, had an opportunity of studying under favorable circumstances a small number of cases of continued fever in England. Dr. Shattuck had been already familiar with the typhoid fever of Paris, where he had then recently been engaged in its investigation, under Louis. It was at the particular request of Louis, as well as from his own warm interest in this very important question of diagnosis, that his observations were made. He saw thirteen cases of continued fever, at the London Fever Hospital,

[1] Dublin Journ. of Med. Science, July, 1838.

where he says, through the kindness of Dr. Tweedie the attending physician, and of Mr. Goodfellow the resident medical officer, every facility for the examination of the patients and for anatomical researches was afforded him. An account of these cases was communicated by Dr. Shattuck to the Medical Society of Observation of Paris. They were subsequently made the groundwork of an elaborate memoir of nearly seventy pages, by M. Valleix, which is contained in the October and November numbers of the *Archives Générales de Médecine*, of Paris, for 1839. Dr. Shattuck's own history of his observations was published in the *Medical Examiner* for February 29, and March 7, 1840. As M. Valleix's analysis and comparison are founded entirely upon the cases furnished by Dr. Shattuck, it is unnecessary to take any further notice of the former, excepting to say that the author arrives at the conclusion that the typhoid and typhus fevers are both to be met with in England, and that they are distinct diseases.

Dr. Shattuck's paper contains histories, more or less complete and extensive, of six of the thirteen cases. The first of these was clearly enough identical with the typhoid fever of Paris and New England. The patient was twenty-two years old; and in addition to many symptoms common to both diseases, there were meteorism and diarrhœa; and on examination after death, the characteristic lesion of the elliptical plates and the mesenteric glands, although moderate in extent, was present. Nothing is said in the report of this case of any cutaneous eruption. The second case corresponded in its most prominent features to the typhus fever of the Irish writers, and of Dr. Gerhard. There was no meteorism, and the skin of the trunk and limbs was covered with numerous spots, of a dark red color, imperfectly disappearing on pressure, of the size of the head of a pin or of a small pea, grouped together. The elliptical plates and the mesenteric glands were in a healthy condition. In the third case, the disease does not seem to have been so clearly marked. The symptomatology was rather that of typhoid than of typhus fever; but along with four or five lenticular rose spots on the abdomen, slightly raised above the surface of the skin, and disappearing on pressure, there were other spots grouped together, not raised above the surface. The history of the case is not very full. The fourth case was evidently enough, I think, one of typhus fever.

The abdominal symptoms were very slightly marked; there were redness and suffusion of the eyes, and the deep red grouped eruption over the skin of the body and arms. In the fifth case, which is briefly described, the diagnosis is uncertain. There were no abdominal symptoms, and both eruptions seem to have been present, as in the third case. The sixth and last case is reported more at length. It resulted fatally, and after six days of mild and damp weather, the abdominal viscera were removed from the body and examined. There was no appreciable alteration of the elliptical plates, or the mesenteric glands. Dr. Shattuck seems disposed to consider this case as one of typhoid fever. There was diarrhœa, and the abdomen was somewhat swollen. It was tender on pressure, but so also were the limbs. There were few lenticular rose spots upon the abdomen, but they were followed by an abundant petechial eruption, of a deep red color, scarcely disappearing on pressure, not raised above the skin, and extending over the body and limbs. It ought to be added that this patient, who up to that period had been in good health, was seized with the disease the day after she had been employed in washing the clothes of the porter of the hospital, who had just died of fever.

It is not my purpose to follow out in detail Dr. Shattuck's analysis and comparison of the phenomena presented in his cases. Throwing out one of the cases, he divides the remaining twelve into two series—the first corresponding in its general features to typhoid fever—and the second distinguished from the first by the absence of abdominal symptoms, of the lesions of the glands of Peyer, by presence of a peculiar eruption, and by the liability to the disease on the part of older persons. The first series consists of three cases, one of which terminated fatally; the second consists of nine cases, four of which were fatal.

These observations, although few in number, are very valuable. They were made under interesting circumstances, by a competent and accomplished observer; and they show conclusively, so far as they go, that many cases at least of the continued fever of Britain, may readily be distinguished during life from the typhoid fever of France and our own country; and that they are not characterized by the same anatomical lesion which is present in the latter.

The forty-fifth volume of the *Edinburgh Medical and Surgical*

*Journal* contains some observations on Continued Fever, as it occurs in the city of Glasgow hospitals, in the form of a letter to the editors, by Dr. Robert Perry. The only thing in these observations which it is at all important for me to notice, is the view which Dr. Perry takes of the relations between *dothinenteritis* and *typhus fever*. He looks upon the intestinal lesion as an accidental complication of typhus fever, and not less frequently, also, of smallpox; and says that, in the latter disease, the morbid appearances in the intestine are the same as those which occur in dothinenteritis itself, which disease, he says, may also exist as an affection *per se*, characterized by its peculiar symptoms; and from his enumeration of these symptoms, it is very certain that he has reference to typhoid fever. It is quite clear that Dr. Perry's observations, notwithstanding their extent, and he speaks of having made three hundred autopsies, have not been sufficiently accurate and discriminating to aid us much in the settlement of nice and difficult questions of diagnosis, like the one under consideration.

In the month of April, 1840, Dr. Alexander P. Stewart read, before the Parisian Medical Society, a valuable paper upon the question of the identity or non-identity of typhoid and typhus fevers. This paper is contained in the *Edinburgh Medical and Surgical Journal*, for October, 1840. Dr. Stewart says that when he began, in 1836, the practical study of fever, he was much struck with the simultaneous occurrence, in the wards of the Glasgow Fever Hospital, *of two sets of cases, in which the symptoms, however little most of them might seem to differ, when viewed individually, presented, when taken collectively, characters so marked as to defy misconception, and to enable the observer to form with the utmost precision the diagnosis of the nature of the disease, and the lesions to be revealed by dissection.* In one class of cases, the affection, when it was mild in its character, and of short duration, was not attended by any eruption; while those cases in which it was fatal presented an abundant and generally a profuse eruption; but in the other class of cases, which equally, and even in a much higher proportion, went on to a fatal termination, there was rarely any and at most only a very scanty eruption. Dr. Stewart also noticed that the disease, in the latter class of cases, was much more gradual in its progress and prolonged in its duration than in the former; and, finally, to com-

plete the contrast, already so striking, dissection proved the existence in the one disease of most extensive local lesions, and in the other the absence of all prominent local lesions whatsoever. Dr. Stewart then proceeds to consider at some length the leading features of difference between these two diseases, in regard to their origin, their proximate causes, their course and duration, some of their symptoms, some of their anatomical lesions, and their treatment. He considers it settled that the poison of typhus is frequently generated by the crowding together of great numbers of individuals in close and unventilated places, while the similar origin of typhoid fever is, at least, very doubtful; that typhus is eminently contagious, while typhoid fever is so to a much more limited extent, and only under peculiar circumstances; that the mean duration of typhus is much less than that of typhoid fever; that relapses are as common in the latter as they are rare in the former; that well-marked crises occur frequently in typhus, but never in typhoid fever; that the symptoms connected with the abdomen and that the cutaneous eruption are very dissimilar in the two diseases; that there is no resemblance between the anatomical lesions; and that the treatment which may be best adapted to one disease may be most unsuited to the other.

Dr. Stewart had studied typhus fever in Glasgow, and typhoid fever both in Glasgow and Paris, before the publication of his very interesting and instructive paper; and many of his conclusions are founded upon his own careful observations of the two diseases. I cannot help remarking that it is somewhat singular that, amongst the many observers whom he quotes in support of the views which it is the object of his paper to establish and to illustrate, he should have wholly overlooked the researches of our countryman, Dr. Gerhard, who, by his history of the epidemic typhus of Philadelphia, in 1836, had done more than any other observer towards determining the very questions which constitute the subject of Dr. Stewart's essay.

It is proper that I should notice here, very briefly, some remarks upon this subject, appended to an elaborate prize essay, on the sources and mode of propagation of the continued fevers of Great Britain and Ireland, by Dr. William Davidson, of Glasgow. Dr. Davidson institutes a loose general comparison of the symptoms of the two fevers, and pronounces them nearly or quit identical. He gets over the difference in regard to diarrhœa, by

attributing its frequency in the typhoid fever of Paris to the neglect of the French to use purgatives, and to the consequent irritation of the intestinal mucous surface, by the retained feces. The seeming difference in relation to the comparative frequency of meteorism in the two diseases, he explains by supposing that the French apply this term to much slighter distensions of the abdomen than would justify the English in its use. He quotes Dr. Lombard to show that the symptoms of the two fevers are the same. Dr. Lombard's *opinions* upon this subject may be very sound; but we have already seen that his *observations*, so far as the symptoms of the diseases are concerned, were too few and too hurried to be of any value whatever. Dr. Davidson admits that the intestinal lesion is very rare on his side of the channel, and almost invariable on the other; but this circumstance he seems to suppose may be accounted for by differences of climate, diet, habits, &c. So far as Dr. Gerhard's researches are concerned, in relation particularly to the lesions, he begs the question entirely, by implying that the disease which he describes could hardly have been British typhus, since fifty consecutive inspections of that disease could not be made without finding one decided instance of alterations in the intestinal follicles. He also misunderstands Dr. Gerhard, in representing him as resting his diagnosis of typhus almost exclusively on the absence of the lesion, and as admitting the almost perfect identity of the symptoms of the two diseases, neither of which does Dr. Gerhard do. In conclusion, he admits that "*the strength of his argument*" in favor of the identity of the two fevers lies in the fact that it has been admitted that cases of typhoid fever have occurred with no intestinal lesión. After the full exposition which has been given of this particular point, and the extreme infrequency which has been shown of the occurrence itself, it is obvious enough that the argument deduced from it is characterized by anything rather than *strength*.

In an inquiry into the sources and mode of action of the poison of fever by Dr. Alfred Hudson, physician to the Navan Fever Hospital, republished in this country in connection with the above-mentioned Essay in Dr. Dunglison's *Medical Library*, the author takes the opposite view of this subject. He recognizes the essential dissimilarity of typhus and typhoid fevers; and gives the valuable results of his own personal observations in the

following words: "In the Navan Fever Hospital there have been, for the last seven years, almost always *two distinct forms of fever present;* one or the other occasionally preponderating, so as at times nearly to exclude the other. Thus, for the first three years, the prominent features were pain, tenderness and meteorism of the abdomen, diarrhœa, and not unfrequently these symptoms combined with catarrh; several cases of perforation of the ileum occurred towards the close of this period; petechiæ were not frequent, and were late in their appearance, and we had few instances of communication by contagion. During the three following years a highly contagious fever prevailed, and the symptoms and treatment were completely different; delirium, subsultus, dysphagia, being the ordinary symptoms, and diarrhœa being rarely met with; nearly every case presented the measly efflorescence, and instances of contagion were as numerous as they had been rare previously. During the present summer, the prevailing type has been the abdominal fever of the first period, and instances of typhus are infrequent, certainly not a fourth of the whole, and sent exclusively from a district in which the epidemic of last year still lingers.

At a meeting of the Dublin Pathological Society, January 31, 1846, Dr. Greene stated that, whenever he met with the phenomena so accurately described by Louis, as belonging to typhoid fever, he invariably concluded that follicular disease of the intestine was present.[1]

Many of the French writers upon typhoid fever, of the present period, seem to incline to the opinion that the *camp and jail fever* of former observers, and the typhus of the British authors, are identical with that of their own country. In 1837, the Royal Academy of Medicine crowned with one of its prizes a memoir by M. Gaultier de Claubry, upon the differences and analogies between typhoid and typhus fevers, the conclusion of which memoir is in these words: "There are no means of distinguishing typhus from typhoid fever, in relation either to the lesions or the symptoms of the two diseases." The same writer, as late as October, 1839, says that the identity of the two diseases is henceforth put beyond doubt. It is proper to add that, at the same time, the Academy bestowed a second prize upon another

[1] Dublin Hospital Gazette, March, 1846.

memoir upon the same subject, in which the opposite doctrine was advocated. In regard to the memoir of Gaultier de Claubry, it is important to state that his object is to demonstrate the identity of the typhoid fever of Paris, and the jail, army, and camp fevers of the continent of Europe. *He formally puts aside the British typhus.* He insists, as though it was one of the strongest points in his argument, upon the constant presence, in the continental jail and camp fever, of the lesion of Peyer's glands. This question has since been very fully discussed by the Royal Academy. I only wish it to be clearly understood that the question is quite different from the one now before us.

In the *Archives Générales de Médecine* for January and February, 1842, there is an interesting history of a supposed epidemic typhus fever, which prevailed at Rheims, between the first of October 1839, and April 1840, by M. H. Landouzy; in the course of which the author considers, at some length, this question of the differences and resemblances between typhus and typhoid fevers. The epidemic was confined to the inmates of a certain quarter of the prison of Rheims, and to those whose occupations brought them into close connection with the patients after they were removed from the prison to the hospital, where they were all immediately and successively taken on the appearance of the fever. The entire number of cases was one hundred and thirty-eight, one hundred and three of which were amongst the inmates of the prison; the remaining thirty-five consisting of physicians, medical students, nurses, and others connected with the hospital where the patients were treated.

There are some circumstances which render the history of this particular epidemic one of great value. I will mention only one, and that is, that all the cases came under the observation of the medical attendants immediately on the commencement of the disease. This is rarely the case in hospital practice; and, in the present instance, it afforded a good opportunity for the study of the earliest phenomena of the disease. I shall give a brief abstract of its history.

Amongst the first and most prominent symptoms of the epidemic was stupor. It frequently showed itself as early as the second or third day, and continued until it was lost in coma or delirium. M. Landouzy does not mean by this stupor any degree of mere somnolence, or coma. He thinks that it differs from either of

these states. The expression of the countenance is that of half-demented and stupid astonishment. This is the *stupor attonitus* of Foes. In half the cases it was strongly marked, in the other half it was slight in degree. M. Landouzy thinks that it comes on earlier and is more striking than the same symptom in typhoid fever. True somnolence and coma appeared in a certain number of cases later in the disease, often about the tenth day. Profound coma, so that the patient could not be roused, existed in only twelve cases. Delirium was very common, usually making its appearance between the third and the eighth day. It was generally low and muttering in its character, and in fatal cases it continued until death. Headache was uniformly present at the commencement of the disease. It was for the most part dull and heavy, and felt especially over the eyes. It continued for an uncertain period of time, gradually disappearing or losing itself in coma or delirium. *Subsultus tendinum* was common and strongly marked in grave cases. Redness of the eyes, *tinnitus aurium*, and deafness were present in a certain proportion of cases, but differed in no obvious particulars from the same symptoms in typhoid fever. There was great loss of muscular strength from the beginning of the disease.

In every case except the first, which was not carefully examined, there was an abundant cutaneous eruption, consisting of small spots or ecchymoses, as M. Landouzy calls them, of a red, violet, or black color, not elevated above the skin, and not disappearing on pressure. They were always found on the chest, often also on the abdomen, and in some cases they extended to the arms and legs. They commonly showed themselves about the fourth or fifth day, and gradually faded away between the tenth and the eighteenth. They were abundant and confluent in proportion to the gravity of the disease. The bodies of the sick exhaled a strong, offensive odor, resembling that of mice.

In regard to the absence of appetite, to thirst, the state of the lips, tongue, and mouth, nothing special was observed differing from what occurs in typhoid fever. Nausea was present at the commencement of the disease in all the cases. Meteorism and abdominal pains were uniformly absent. There was diarrhœa at the beginning of the disease in only four cases. In all the others, there was no apparent disturbance in the functions of the intesti-

nal canal. The bowels were more inclined to constipation than to looseness.

A distinct, well-marked, sibilant rhonchus was present in all the cases. There was nothing remarkable in the frequency of the pulse. It was full and large, and, at the commencement of the disease, resisting. There was nothing unusual in the appearance of the blood. Epistaxis occurred in only eight cases. The temperature of the surface was uniformly elevated; the heat was dry and burning. In no instance was there gangrene of any part of the body.

The contagious character of the epidemic was very manifest, as has already been intimated. Three physicians, six medical students, twelve nurses, and other attendants on the sick, after they had been transferred from the prison to the hospital, amounting in all to thirty-five, contracted the fever. Amongst these there were nine deaths, or one in four, nearly; while amongst the one hundred and three prisoners there were only eight deaths, or one in thirteen, nearly. None of the nurses who had had typhus fever in 1814 were attacked with the disease, but two medical students and one physician who had had typhoid fever, the former six months and the latter twenty years previously, suffered very severely.

Of one hundred and four patients in whom the age was accurately ascertained, sixty were from fifteen to thirty years old, thirty-six were from thirty to fifty, and eight were from fifty to seventy.

The quarter of the prison in which the disease commenced, and to which it was almost exclusively confined, was originally intended to accommodate from eighty to one hundred inmates; it had usually contained from one hundred to one hundred and twenty; at the time when the epidemic appeared, its population amounted to one hundred and eighty.

Many, indeed most, of the foregoing circumstances in the history of this local epidemic, correspond to the phenomena which we have found to occur in typhus fever. But, according to M. Landouzy, in the six autopsies which were made, the intestinal lesions characteristic of typhoid fever were present. The elliptical plates were either thickened and elevated, or they were the seats of ulcerations, and the mesenteric glands corresponding to

ascertained. That this has been done, absolutely and definitively, I do not pretend. That typhoid and typhus fevers are, clearly and unequivocally, fundamentally distinct diseases, may not have been positively demonstrated. I admit, that the paper of M. Landouzy throws some doubt upon the question. *But, as has been remarked before, whether the two diseases be or be not specifically and nosologically unlike each other, it is equally important that the wide differences which confessedly do exist between them should be pointed out, and their real relations established.* This I have endeavored, so far as the present state of our knowledge could enable me, faithfully and truly to do.

In regard to the identity of the former camp and jail fevers of the European continent, either with typhoid fever or with typhus, it is not possible to come to a positive conclusion. Louis thinks that they were typhoid, others think that they were typhus. It is probable, as I have already said, that both forms of fever may have prevailed. At any rate, the descriptions given of them are generally so imperfect, that it is wholly impossible now to decide this question with any degree of certainty. It is quite as well, perhaps, not to attempt its solution at all.

A friendly critic, in an American medical journal, expresses some surprise at the opinions contained in the above paragraph. He thinks there can be no doubt that the continental camp and jail fevers were true *typhus*, differing essentially from *typhoid* fever. Since the publication of my first edition, I have read carefully the prize memoir of Gaultier de Claubry, upon this question, and I heard a part of the very full and animated discussions, of which it has recently been the subject in the Royal Academy of Medicine, at Paris. These investigations have fully confirmed me in the soundness of the foregoing conclusions. It is impossible to read the detailed and elaborate work of M. Gaultier de Claubry, without being convinced that many of the epidemics prevailing in the armies and prisons throughout various portions of the Continent, from 1804 to 1814, corresponded in all respects to *typhoid fever*, while in other instances the disease was true Irish *typhus*.

In my Essay on the Philosophy of Medical Science, I have endeavored to ascertain and to point out the true principles of nosological diagnosis; I have attempted to lay down the rules by which we ought to be governed in deciding upon the *individuality*

of any given disease. I do not propose, here, to enter again upon the discussion of this subject; I wish merely to say that the elements which typhoid and typhus fever possess in common are neither more numerous nor more striking than those which are possessed in common by many other diseases admitted to be essentially dissimilar from each other. Would not *smallpox* be constantly confounded with *typhus*, if neither of these diseases was marked by any distinctive cutaneous eruption? In a note to the chapter in my essay, just referred to, I have said: "Let me here add that this question of the essential likeness or unlikeness of these two diseases—typhus and typhoid fever—one of the most important and interesting questions of specific diagnosis that has ever occupied the attention of physicians—if submitted to the test of the principles which I have laid down, and fairly tried by them—cannot fail, I think, to be settled in favor of the doctrine of their fundamental dissimilarity. The two diseases will be found to approach each other very closely in the possession of those morbid processes and phenomena—I mean, general fever of the typhoidal type, certain changes in the composition and quality of the blood, and certain nervous symptoms—*which are common to many diseases, and, for this reason, of but small value as diagnostic or distinctive characters;* while they are separated clearly and broadly from each other, by the presence in one, and the absence from the other, of very strongly marked and constant anatomical lesions, and of groups of symptoms equally striking, constant, and characteristic. Any principles of diagnosis, or any rules of reasoning, that make true typhus fever and typhoid fever essentially one specific disease, will make smallpox, and oriental plague, also, nothing but varieties or modifications of the same single disease. This result will be found to be absolutely unavoidable."[1]

It is now five years since the publication of the first edition of my work on fever. This question of the true relationship between typhus and typhoid fever still remains a matter of controversy. It has been extensively discussed, both in England and France, and the opinion of the profession is still divided. I have watched this discussion closely and dispassionately, and I have seen nothing to induce me in any degree to modify the

[1] Essay, etc., pp. 140–141.

judgment which I had formed and expressed; unless, indeed, it be in withdrawing altogether the slight doubt or qualification with which it was accompanied. The more I have studied the subject, and the more I have reflected upon it, the more thoroughly have I been convinced that the objections to the opposite doctrine are conclusive and insuperable, and I cannot doubt that such will be the final verdict of science in the issue before us.

In connection with this subject, I have the pleasure of publishing the following interesting letter from Dr. William Power, of Baltimore, dated September 4, 1847. "The questions you ask have interested me very deeply; and this summer for the first time I have had ample opportunity to fix definitely my own opinions. What I write you now resumes the opinions also of Drs. Chew and T. Buckler, who saw the disease throughout its whole visitation in this city; nor do I know of one gentleman who had any opportunity of studying it here who differs from us.

"We have had for the last fourteen months an epidemic of typhoid fever in Baltimore. The wards of the almshouse and infirmary have constantly contained a large number of cases of this disease, presenting nothing remarkable, save that the cases had, as a general rule, more of the adynamic type than in former years, and required and bore more stimulation. Early in May, two vessels arrived, bringing Irish emigrants; one from Liverpool, the other from the South of Ireland. Other vessels succeeded these; so that upwards of two hundred cases were treated at the infirmary, and upwards of eighty at the almshouse. These cases were *typhus*, so exactly corresponding with Gerhard's description of the Philadelphia epidemic of 1836, that I am constrained to say, I know of no better portraiture of any disease than that which he has given us of typhus fever. I made or assisted at twenty-six *post-mortem* examinations; in *not one* did I see any trace of the peculiar lesion. In nine of those who died, having loose bowels during life, we found either the lesions of dysentery or of diffused muco-enteritis; no mesenteric alteration in any case. The parenchymatous organs and mesenteric vessels were congested with a dark fluid blood; and the condition of the spleen, bronchial mucous membrane, lungs, and brain resembled what we find in congestive remittent or typhoid cases. The stomach was uniformly more altered, and presented deeper traces of inflammation than in typhoid fever. We had fourteen autop-

sies of typhoid fever during the same period, and it thrice occurred that we had the bodies opened side by side for the sake of comparison made at the time.

"The mode of access, facies, march, eruption, symptoms, treatment, and convalescence are all different between the two diseases. We had both forms of fever at once under observation; German emigrants and domestic patients with *typhoid*, and Irish and English with *typhus*. Nay, more than this, four of the seamen of the Rio Grande, a vessel which brought seventy cases of *typhus*, had true *typhoid fever*, and several of the steerage passengers had the same disease. There was no mistake in the diagnosis in any case where the issue was fatal, as proved by the autopsy: and in the successful cases, the difference of eruption, diarrhœa, meteorism; the peculiar nervous symptoms; the greater emaciation; bed sores, which were so rare in the worst cases of typhus, that I saw but two, made the diagnosis simple to every clever student. The effect of a full stimulant treatment made the difference still more obvious. In short, we have here in Baltimore, *no doubt* but the fullest conviction of the non-identity of the two diseases.

"Furthermore, there is the undoubted contagiousness of typhus. Two of the Sisters of Charity at the infirmary—one of whom died—and three out of five resident students took the disease. Four of the hospital assistants, and several of the inmates of the almshouse were attacked; many cases occurred also in the city, where direct intercourse could always be traced and proved.

"Here is another interesting order of facts. A German had *typhoid fever*, and was eighty days in bed under Dr. Buckler; he recovered, and was acting as hospital assistant; in tending the sick emigrants, he was seized with *typhus*. Two years ago, Dr. Berryman had at the almshouse a severe attack of *typhoid fever*. He was appointed resident physician at the new quarantine hospital, where all these cases are now sent. He took the fever and died last week;—the most promising young man I have ever known, and whose loss has filled us all with grief. Again, one of the emigrants who came near dying in May last, with *typhus*, is at this very moment at the point of death, with *typhoid fever*.

"There is as much difference in my mind between the two diseases, as there is between measles and scarlatina. Huxham has beautifully drawn the distinction between the slow nervous and

malignant fevers; excepting the new lights we have in pathology, we can add but little to what he has said. Corrigan, in Dublin, sees the difference between what he calls *enteric* and *typhus* fevers. Dr. Wood, in his late work, appears to me to have handled this subject better than any other of our systematic writers. I perfectly agree with him in his conclusions. It appears to me that we are better placed than either the French or English to study this question without prejudice, and more likely to arrive at the truth."

I have placed in the following tabular summary, as a matter of convenient reference, the leading points of distinction between typhus and typhoid fever, side by side.

| Typhoid Fever. | Typhus Fever. |
|---|---|
| 1. *Mode of Access.*—More generally gradual, insidious, and creeping, than in typhus. | 1. More frequently sudden and formal than in typhoid fever. |
| 2. *Heat of Skin.* | 2. More frequently burning and pungent, during the early stages, than in typhoid fever. Fuliginous flush of face more common than in typhoid fever. |
| 3. *Mind.*—Delirium and other cerebral symptoms coming on, and increasing gradually, after the first week, more generally than in typhus. | 3. Cerebral symptoms, especially dulness and stupor, more strongly marked at the onset of the disease than in typhoid fever. |
| 4. *Bowels.*—Diarrhœa, with thin liquid discharges, very common. Gurgling on pressure over region of cœcum. Meteoric distension or rigidity of abdomen. Griping pains common. | 4. Spontaneous diarrhœa rare. Discharges from bowels not liquid. No gurgling on pressure over region of cœcum. Meteoric distension very rare. Griping pains rare. |
| 5. *Emaciation.*—More common and greater than in typhus. | 5. |
| 6. *Epistaxis.*—More common than in typhus. | 6. |
| 7. *Hemorrhage from the Bowels.*—Quite common. | 7. Very rare. Does it ever occur? |
| 8. *Cutaneous Eruptions.* — Bright, scanty, rose-colored eruption; slightly elevated above surrounding skin; readily disappearing on pressure; mostly confined to skin of chest and abdomen. | 8. In many cases, especially grave ones, more abundant petechial eruption; not disappearing on pressure;—in other cases, no eruption. |
| 9. *Eschars.*—More common than in typhus. | 9. |
| 10. *Lesions.*—Peyer's glands always altered; generally ulcerated. Mesenteric glands reddened, enlarged, and soft- | 10. Peyer's glands, and mesenteric glands healthy. Blood more generally dark and grumous. Dark engorgement |

| Typhoid Fever. | Typhus Fever. |
| --- | --- |
| ened. Spleen more frequently enlarged and softened than in typhus. Ulceration of the pharynx and œsophagus more common than in typhus. Large intestines more frequently distended with gas than in typhus. | of vessels and sinuses of brain more constant than in typhoid fever. |
| 11. *Causes.*—Confined to no geographical localities. Prevailing constantly and extensively amongst scattered, cleanly, well fed, and well sheltered rural populations. Occasionally and moderately contagious. More frequently sporadic than typhus. More generally limited to the early and middle period of life than typhus. | 11. Limited to certain geographical localities. Generally confined to crowded, filthy, and poorly ventilated habitations. Under such circumstances eminently contagious. Occurring much more frequently after the thirty-fifth year of life than typhoid fever. |
| 12. *Duration.* — Average duration somewhat greater than typhus. Prolonged to the fortieth or fiftieth day much more frequently. | 12. Terminating fatally, or in recovery within the first ten days much more frequently than typhoid fever. |
| 13. *Effects of Remedies.*—Bearing depletion better than typhus. | 13. Requiring more active stimulation than typhoid fever. |

Another period of between four and five years has elapsed since the publication, in my second edition, of the foregoing summary. I have preferred to let it stand as it was then written, making such additions to it here as the materials accumulated during this period have furnished.

I do not know that this question of the true relation between the two great forms of continued fever is any nearer to a positive and final solution than it was five years ago. Medical opinion is still divided, and somewhat singularly so, in regard to it. In the city of New York, where both forms of the disease—but more especially the typhus—have been extensively and carefully studied for several years by sound pathologists, and accomplished and thoroughly reliable observers, the opinion is nearly, if not quite unanimous, that they are *forms* or *varieties* merely of a single disease. This is the opinion of my colleagues, Dr. Smith and Dr. Clark. I regret that the observations upon which this opinion rests have not been recorded in such form and manner as to render them any further available in the settlement of this question.

In Boston, Philadelphia, and Baltimore, the general opinion of the profession is the other way.

12. *Loss of Muscular Power.*—Little more than a fourth of the patients attacked with typhoid fever kept their bed entirely before the 7th day of disease. All the patients affected with typhus, whose cases are here considered, took altogether to their beds before the 7th day of disease. The prostration was rarely so extreme in the cases of typhoid fever as in those of typhus. Extreme prostration, when it did occur in typhoid fever, was not observed till from the 14th to the 30th day, while in a large majority of the cases of typhus fever it was marked between the 9th and 12th days of disease.

13. *Epistaxis* was present in five of fifteen cases of typhoid fever—in not one of twenty-three cases of typhus fever. *Hearing* was equally and similarly affected in the two diseases.

14. *Eyes.*—The conjunctivæ were *very much* more constantly and intensely injected in the cases of typhus than in those of typhoid fever; the pupils were absolutely larger than natural in a majority of the cases of the latter disease, while they were abnormally contracted in a large majority of the cases of the former affection.

15. *Tongue.*—Although individual cases of the two diseases may have closely resembled each other in the appearance of the tongue, yet, taking the whole of either group of cases, this organ presented a singularly different aspect in the one from what it did in the other. It was much more frequently moist throughout the disease in typhoid than in typhus fever. When dry it was often red, glazed, and fissured, in the former; rarely so in the latter. Again, in typhoid fever, when the tongue was brown, its hue was much less deep—it was of a yellowish, instead of a blackish, brown. The small dry tongue, with red tip and edges, smooth, pale brownish-yellow fur, fissured—the surface seen between the fissures being deep red—may be considered differentially as a diagnostic sign of typhoid fever. One only of twenty patients affected with typhoid fever, but eight of forty patients laboring under typhus fever, were unable to protrude the tongue when bidden.[1]

16. *Intestinal hemorrhage* occurred in one-third of the patients affected with typhoid fever—in none of those suffering

[1] This clearly indicates the difference in the amount of prostration in the two diseases.

from typhus fever. The other abdominal symptoms and signs need no recapitulation.

17. *Pulse.*— The frequency of the pulse fluctuated much more, from day to day, in the cases of typhoid than in those of typhus fever.

18. *Cough and Physical Chest Signs.*—Sonorous râle was very much more frequently present in the cases of typhoid than in those of typhus fever—*i. e.*, it was present in eleven out of twelve cases of the former, and in seven only of twenty-one cases of the latter. Dulness of the most depending part of the chest, from intense congestion of the lung, was observed in nine cases of typhus fever—in no case of typhoid fever.

19. *Erysipelas* occurred in seven of the twenty-three—*i. e.*, in nearly a third of the cases of typhoid; in two only of the forty-three cases of typhus fever—*i. e.*, in less than one-twentieth of them.

20. *Cadaveric rigidity* ceased much more quickly in the subjects dead from typhus fever than from typhoid fever.

21. *Discoloration of the walls of the abdomen, and of the skin covering the larger veins*, was much more frequently present in those dead from typhus than typhoid fever.

22. *Emaciation* had made greater progress in the typhoid than in the typhus subjects.

23. *Spots.*—The spots observed during the progress of the cases of typhus fever continued after death; no trace of the spots visible during life could be detected after death from typhoid fever.

24. *Head.*—After typhoid fever, the pia mater and arachnoid separated from the convolutions with abnormal facility in one only of nine cases examined with reference to this point. The vessels of the pia mater were abnormally filled with blood in one-third of the cases, but intensely congested in one of fifteen cases; the cerebral substance was congested in one seventh of the cases. After typhus fever, the pia mater and arachnoid separated with abnormal facility in nine of eleven cases, of which notes on the point were made. The vessels of the pia mater were congested in nearly half, and intensely congested in one-fifth of the whole of the cases; while the cerebral substance itself was abnormally congested in half.

*Hemorrhage into the cavity of the arachnoid*, which was

not found in a single case of typhoid fever, had occurred before death in one-eighth of the cases of typhus fever. The amount of serosity found within the cranial cavity was decidedly greater after typhus than typhoid fever.

25. *Pharynx.* — After typhoid fever, this organ was found ulcerated in one-third of the cases. After typhus fever, ulceration of the pharynx was not detected in a single case.

26. *Larynx.*—Ulceration of the larynx was found in one of fifteen subjects, dead from typhoid fever; in one of twenty-six from typhus fever.

27. *Œsophagus.* — After typhoid fever, ulcerated in one of fifteen cases in which it was examined. After typhus fever, the œsophagus was free from ulceration in all the twenty-four cases in which it was examined. The epithelium separated from the œsophagus spontaneously at an earlier period after death from the latter than the former disease.

28. *Stomach.*—In none of the fifteen cases examined after death from typhoid fever, was the mucous membrane of the stomach softened throughout its whole extent; in no case did softening of the cardiac extremity approach perforation. In four of thirty-seven cases of typhus fever, the whole mucous membrane of the stomach was softened; and in four others there was such extreme softening of the whole of the coats of the great *cul-de-sac*, that they were perforated by the slightest violence.

29. *Small Intestine and Mesenteric Glands.*—The presence or absence of lesion of these organs, was the ground on which the cases of typhoid and typhus fever here analyzed were divided from each other; consequently they were invariably diseased in the one and normal in the other.

30. *Large Intestines.*—After death from typhoid fever, the mucous membrane of the large intestines was found ulcerated in rather more than a third of twenty cases. In no instance after death from typhus fever.

*Peritoneum.*—As peritonitis was in typhoid fever secondary to, and dependent on the entero-mesenteric disease, it may here be excluded from consideration.

31. *Spleen.* — This organ was enlarged in all the cases of typhoid fever; softened in one-third of the cases only. Before the age of fifty, it was as large after typhus as typhoid fever; after that age, it was decidedly smaller in the former than in the

latter affection. After the age of fifty, it was as soft in typhus as in typhoid fever; before that age, it was less frequently softened.

32. *Gall-Bladder.*—There was ulceration of the lining membrane of the gall-bladder in one of fourteen cases of typhoid fever; in none of thirty-one cases of typhus fever. In the latter disease the bile was much thicker, and of a darker green color, than in the former.[1]

33. *Liver, Pancreas, Kidneys.*—These organs were more flabby in the cases of typhus than in those of typhoid fever.

*Urinary Bladder.*—This viscus was ulcerated in one of the cases of typhoid fever—in none of the cases of typhus fever.

34. *Pericardium.*—This cavity contained a small amount of yellowish transparent serosity, in all the cases of typhoid fever examined. The contained serosity was red, from transudation of a solution of hæmatosin, in five of thirty-one cases of typhus fever.

35. *Heart.*—The muscular tissue of this organ was much more frequently and decidedly flabby, and its lining membrane was much more frequently and deeply stained of a dark red color, in the cases of typhus fever than in those of typhoid fever.

36. *Lungs.*—Granular and non-granular lobular consolidation were very frequent in the subjects dead from typhoid fever—rare in those dead from typhus fever. The reverse was the fact with reference to consolidation from congestion of the most depending part of the lungs.

37. *Pleura.*—Recent lymph or turbid serosity was found in six of fifteen cases of typhoid fever—*i. e.*, between half and one third, or in the proportion of forty per cent. The same lesions, but much less in amount, were found in two only of thirty-six cases of typhus fever—*i. e.*, one-sixteenth, or in the proportion of 5.5 per cent.

The particulars here briefly recapitulated, and still more those fully detailed in the foregoing papers, appear to me to prove indisputably that the symptoms, causes, duration, anatomico-pathological lesions, and the tendency to cadaveric changes, are different in typhoid fever to what they are in typhus fever.

To account for the differences in symptoms which exist in con-

[1] The condition of the bile, as found after death in these two diseases, is worthy of more careful investigation. The difference in appearance is, in a large majority of cases, well marked.

tinued fever, with and without entero-mesenteric disease, the two following assertions have been put forward: 1. That typhoid fever is merely typhus fever complicated with lesion of a particular organ; and therefore it is to be expected that certain symptoms referable to, and dependent on, that lesion will be present, and so far modify the symptoms of the disease.

If the symptoms and signs referable to the intestinal disease as a cause—*i. e.*, the condition of the tongue, the diarrhœa, increased resonance, and fulness of the abdomen, gurgling in the iliac fossa, pain and tenderness in the same region, or even the daily fluctuations in frequency of the pulse—were the only symptoms by which typhoid fever was separated from typhus fever, although the idea might cross the mind that they were two diseases, no sufficient ground for their separation would be present, unless the specific cause of the one was proved to be different from that of the other. But putting aside the symptoms strictly referable to the abdominal lesion, the general symptoms of the two diseases, in the cases here analyzed, differed widely; such differences having no apparent connection with the local affection, but being probably like it, dependent on some common cause acting on the whole system simultaneously. Thus the remarkable differences in the kind, not simple amount, of the rash in the two diseases, and the tendency to local inflammation, to erysipelas, and to ulceration, observed in the cases of typhoid fever here analyzed, cannot, with any show of reason, be considered to have been dependent on the diseases of Peyer's patches —*i. e.*, in the same way as the abdominal signs undoubtedly were; and it is to be carefully borne in mind that the external, the hygienic conditions of either group of cases, were precisely the same in all respects. They occupied the same wards, partook of the same diet, slept on the same beds, under the same amount of clothing, and had the same physician to attend them, and the same nurses to wait on them.

Moreover, of the symptoms common to the two, the headache continued longer, and the delirium and somnolence came on, as we have seen, much later, in typhoid than in typhus fever; and the delirium, too, possessed a more active character. These differences, also, cannot be explained by the presence of intestinal disease in the former, and its absence in the latter affection.

The short comparative duration of the cases of typhus fever,

here considered, is another remarkable point of difference, totally inexplicable by the hypothesis, that typhoid fever is typhus fever with intestinal ulceration. Had the cases eventually recovered, it might have been said, that the intestinal lesion prolonged the disease in the cases of typhoid fever; but that all the fatal cases of fever, with a local lesion of so severe a nature as that recorded to have been present in the cases of typhoid fever, should have had a much longer course than all those other fatal cases of fever in which no organic change of structure could be detected after death, appears to me inexplicable, on the supposition that the former is simply the latter disease, with this serious lesion superadded. Let me repeat, by this hypothesis we are asked to imagine that death is retarded in fever by extensive ulceration of the small intestines, and enlargement, softening, and even suppuration of the mesenteric glands. Surely it behoves the supporters of such a statement to bring forward cogent proofs of the identity of the specific cause of the two affections ere they ask us to admit its truth.

The same mode of reasoning appears to me equally conclusive, when we consider the comparatively early period of the disease at which the patients, suffering from typhus fever, lost the ability to make muscular exertion. For, to suppose that the presence of abdominal complication in fever invariably prevented the extremely early supervention of debility, is, *à priori*, still more absurd than to suppose such lesions to have retarded death. How, again, are we to explain, if we regard typhoid as typhus with abdominal complication, the differences observed in the ages of the patients, in their general manner; the muddy hue of the skin, and uniform flush of the face, the injected conjunctivæ and contracted pupils in typhus fever; and the comparatively clear complexion, the pink flush limited to the cheeks, the pale conjunctivæ and the large pupils, in typhoid fever?

In what way, also, are we to account for the differences observed in the physical breath-signs, on the supposition that the one is merely the other, with abdominal complication? Death itself, moreover, adds new proof to the non-identity of the general affection in the two diseases. The comparatively rapid loss of muscular rigidity, the discoloration of the surface, the more flabby condition of the heart, liver, and kidneys, the extreme softening of the stomach, and the early separation of the epithe-

ticulars detailed in the foregoing papers, prove that this is as true of the eruptions of typhoid and typhus fever, as of those of smallpox and scarlet fever.)

3. The anatomical character of smallpox is never seen in scarlet fever. (Just in the same way the anatomical character of typhoid fever; *i. e.*, lesions of Peyer's patches and the mesenteric glands, is never seen in typhus fever.)

4. Both, *i. e.*, smallpox and scarlet fever, being contagious diseases, the one by no combination of individual peculiarities, atmospheric variations, epidemic constitutions, or hygienic conditions, can give rise to the other. (I have here not attempted to determine how far this holds true with respect to typhoid and typhus fever; but I have considered it in a paper read before the Medico-Chirurgical Society of London, December, 1849, the contents of which I may anticipate so far as to state, that to my mind the origin of the two diseases from distinct specific causes is as clearly proved as that scarlet fever and smallpox arise from distinct specific causes.)

5. The epidemic constitution favorable to the origin, spread, or peculiarity in form or severity of either, *i. e.*, smallpox and scarlet fever, has no influence over the other, excepting that which it exerts over disease in general. (The facts detailed in these papers, prove that this holds as true of typhoid and typhus fevers, as of smallpox and scarlet fever.)

If, then, the above are the grounds—and, after mature deliberation, I am able to assign no others, for the separation of smallpox from scarlet fever, I think it is indisputably proved, that typhoid fever and typhus fever are equally distinct diseases; not mere varieties of each other, but specifically distinct; specific distinction being shown in typhoid and typhus fevers, as in smallpox and scarlet fever, by the difference of their *symptoms, course, duration, lesions*, and *cause*."[1]

In further proof of the non-identity of typhoid and typhus fever, Dr. Jenner has published some very striking facts in relation to their local origin. Between May 1847, and November 1849, there were sixty-eight instances, in which from two to five persons with typhoid or typhus fever were received into the London Fever Hospital from the same locality—generally from the same house or room. *With one or two exceptions, there was no*

[1] Jenner on the Identity or the Non-Identity of Typhoid and Typhus Fevers.

*instance in which cases of the two diseases came from the same locality—the same house or room.*

In this connection, it is impossible not to be struck with the great fact—so extraordinary, and so utterly inexplicable, on the hypothesis that typhoid and typhus fever are only forms or varieties of a single disease, depending upon and originating from the same specific cause—*that, for the long period of the last thirty or forty years, in the city of Paris and throughout New England, where this subject has been most carefully studied, only one of these forms of disease should have prevailed, to the entire and absolute exclusion of the other.*

I may remark here, that it is very important for us to bear in mind that great difficulties of diagnosis, in individual cases, are in no way incompatible with the existence of essentially and widely different diseases. Morbid affections, very unlike each other, and in most cases easily distinguishable, may, under certain circumstances, have many things in common; and their symptoms may be so mixed up with each other as to render, in the imperfect state of our knowledge, a positive diagnosis very difficult or impossible; and this without throwing any doubt upon the general question of the radical dissimilarity between the diseases themselves.

# CHAPTER IX.

## THEORY.

It is unnecessary to make any general remarks upon this subject after what has been said in relation to the theory of typhoid fever. A rational interpretation of the phenomena of typhus, of their connections and dependencies, is, if possible, more difficult than in the case of the latter disease. In typhus, there is no constant and uniform lesion of the solids, to which the symptoms can be referred. We certainly have here, if nowhere else in the nosologies, a general disease; an *essential* fever. In regard to its theory, and especially to the primary and fundamental disturbance which, in its turn, gives rise to the subsequent and connected morbid phenomena, the sum of which constitutes the disease, British medical philosophers are mostly divided into two classes; the solidists and the humoralists. More strictly, we might call them the *neuropathists* and the *hemopathists*. The first maintain that the impression of the morbid poison is primarily made upon the nervous system; the latter maintain that this impression is made upon the blood. I do not propose to enter into any history of the reasons urged by the partisans of these respective theories in support of their opinions, or in any way to discuss their merits. I may be allowed to say that an undue degree of importance seems to me to be attached to them by their authors and advocates. They are at best only *explanations* or *interpretations*, more or less probable, more or less ingenious, more or less plausible, of the phenomena of fever, and of the various relations of these phenomena. Sydenham's, or Huxham's, or Cullen's, may be as good as any of them. They are probably all of them more or less erroneous, they may be wholly so.[1] Let

[1] There seems to have been in the British medical mind an irresistible tendency to theorize in medicine, and to substitute for the careful observation of facts, and their rigorous analysis, the doubtful conclusions of speculative reasoning. This tendency is clearly enough giving way to a better spirit, and there can be no hazard

us remember, besides, and a consolatory reflection this is, in the midst of these multiform and conflicting *theories*, that they constitute an element in medical science of very subordinate perhaps questionable value. The true science of fever is in its appreciable phenomena and their ascertainable relations, not in any explanation of the nature of these phenomena and these relations.

in predicting, that the next quarter of a century will witness a complete revolution in the temper and philosophy of British medical science. No one can doubt this, who is familiar with the recent labors of British medical men; and especially with the tone and spirit of some of their leading reviews. I may refer, without the imputation of invidiousness, for an illustration of what I mean, to an unpretending but most admirable article in the *British and Foreign Medical Review* for July, 1841, on the numerical method of investigation; and to more than one other paper, in the same *Review*, containing full and frank acknowledgments of the immense obligations which our science owes to the labors and the example of Louis, to whom it is no extravagant praise to say, that the spirit of Dryden's couplet, so far as medicine is concerned, is as applicable as it was to the great expounder of true philosophy:—

> The world to Bacon does not only owe
> Its present knowledge, but its future too.

# CHAPTER X.

## TREATMENT.

I SHALL not enter so fully into the therapeutics of typhus as I have already done in relation to that of typhoid fever. It is unnecessary to do so, for two reasons; in the first place, typhus is not a disease of very common occurrence amongst us; and, in the second place, although there is not by any means entire uniformity of opinion amongst the best and most extensive observers in regard to the most appropriate treatment of this disease in all its details, and under all circumstances; still, there is a good degree of agreement in regard to some of the leading points in its management. I shall say what seems to be necessary to the practical understanding of this subject; treating, in so many sections, of individual remedies or classes of remedies, and arranging them somewhat, at least, in the order of importance which has generally been attached to them.

SEC. I.—*Bleeding.* General bloodletting has been pretty frequently resorted to by British practitioners, in the management of typhus; although there seems to have been at all times some practitioners more than doubtful about the propriety of this remedy. One very striking fact, however, is observable in connection with this subject; and that is, the extreme caution with which bleeding is, almost without exception, recommended and practised. Sangradoism was never popular in the treatment of typhus. Amongst the older practitioners, Sydenham, Pringle, and Grant were bleeders; but they were moderate bleeders, as most of their successors have been.

During the early part of the present century, this operation seems to have been not often resorted to; and the credit of having very much aided in restoring it to public confidence has been given to Dr. Thomas Mills, of Dublin. Dr. Mills published his *Essay on the Utility of Bloodletting in Fever*, in 1813. But

even Dr. Mills, the restorer and champion of the practice, as he seems to have been regarded, was what would now be considered a very small bleeder. His most common practice was to abstract from four to six ounces, and in many cases this was not even repeated.

Gilbert Blane, who saw a great deal of the disease on shipboard, says of bloodletting that it is a remedy very ill adapted to this sort of fever, particularly in a hot climate.[1]

Sir John Pringle says: "The pulse is little affected by bleeding once, if a moderate quantity of blood be taken away; but if the evacuation is large, and especially if repeated *to answer a false indication of inflammation*, the pulse increasing in frequency, is apt to sink in force and often irrecoverably, whilst the patient becomes delirious."[2] "Many recovered without bleeding," he adds, "but few who lost much blood."

Dr. Edward Percival recommends bleeding, where there is pneumonic complication, to the extent of from eight to fourteen ounces; and says that sometimes, though rarely, it may be repeated once or twice. He cautions his readers against large bleedings, and says that patients will sink under them. Dr. O'Brien bled early to the extent of from six to eight ounces, and repeated the process, if necessary, once or twice. Dr. Grattan, and this only when the lungs were affected, adopted the same cautious practice. In one hundred and sixteen patients whom he bled at the Cork Street Hospital, in 1818, the average quantity of blood taken from each was only five and a half ounces. Dr. John Cheyne, of Dublin, had the reputation of being a free bleeder; but he also was cautious. He says that he has known the operation to destroy life; and that there are many cases of the disease in which, during all their stages, it is wholly inadmissible. His average quantity at a bleeding was only ten ounces, and he rarely exceeded twelve. When more than this amount was to be taken, he considered it his duty to be present, and to superintend the operation. Dr. Armstrong recommends one or two moderate bleedings early in the fever, when it is complicated with local inflammation. Dr. Southwood Smith is one of the most liberal bleeders amongst recent British writers on typhus. But his

[1] Obs. on Dis. of Seamen, p. 363.
[2] Obs. on Dis. of Army, p. 257.

practice is founded on an assumption doubly gratuitous; first, that inflammation is in all cases the morbid condition which is to be removed; and secondly, that it is the only morbid condition in typhus fever over which we have any control. The phraseology of his directions for bleeding is, as it always is, clear, distinct, and emphatic; but the ideas contained in his eloquent words are not so manifest and intelligible as might be wished. He insists upon the necessity of bleeding till local pain is not diminished only, but removed; till inflammation is not merely mitigated, but subdued. The mere mitigation of inflammatory action by bleeding he even thinks is more hurtful than beneficial. Dr. Smith seems to have changed his notions about the utility of bleeding. He informed the author, in the summer of 1846, that, at the London Fever Hospital, bleeding had been performed only four times during the then past year, and twice by mistake. Dr. William Henderson's admirable account of the typhus fever of Edinburgh, in 1838 and 1839, has already been frequently referred to. His analysis of the results of his treatment is especially valuable. Of ninety-six females admitted into the Infirmary during a given period of time, thirty-six were bled from the arm, and the average quantity taken from each patient was twenty ounces. The circumstances which were looked upon as indicating the propriety of bloodletting were—that the fever should not have been in an advanced stage, the individual not of a delicate or previously enfeebled constitution, the pulse at least firm whether small or full, and either particular local suffering or general pains, restlessness, and flushing. In three instances, some of the most important of these indications were wanting; and two of the three were fatal. The average duration of the cases that were bled and recovered, up to the commencement of convalescence, was eleven days and two-thirds, and the mortality was one in eighteen. Fifty-two other female patients, also admitted successively during a given period, who were not bled, gave a mortality of one in ten; and the average duration of these cases, excluding those of a milder character, in which no wine was given, was fifteen days and a half.[1] In the Philadelphia typhus of 1836, bloodletting was rarely practised, and did not appear to be well borne.

[1] Edin. Med. and Surg. Journal, Oct. 1839.

The immediate effects of bleeding seem to be much more obvious and decided in typhus than they are in typhoid fever. Thus, of one hundred and forty-nine patients, in whom this means was resorted to by Dr. Cheyne, in 1816, ninety-four experienced immediate relief. In nearly all the cases treated at Edinburgh, by Dr. Henderson, in 1838 and 1839, the operation of bloodletting was followed by speedy relief, or removal of the local pains, and frequently by a mitigation in the severity of other symptoms.

The conclusions to which we come, then, in regard to this important practical matter are these: first, that general bloodletting to a moderate extent, repeated once or twice, if the indications call for it in the early period of the disease, especially in cases where the previous health of the patient had been sound, where the pulse is somewhat hard, and where there is severe local pain, constitutes a remedy of great and unquestionable value; that it mitigates the severity, shortens the duration, and lessens the mortality of the disease; secondly, that this remedy is always to be used with great caution; that there is an unknown element in the pathology of typhus fever, which renders this caution always necessary, and which, under many circumstances and in many cases, renders the remedy wholly inadmissible. Amongst the contraindicating circumstances may be mentioned the advanced stage of the disease; previous debility or ill health of the patient; a constitution impaired by excesses, and particularly by that of dram-drinking; the absence of the special indications for bloodletting which have already been enumerated; and, finally, the predominance of the congestive or typhoid state, characterized by the extreme prostration of strength, feebleness of the pulse, and torpor of the surface which marks the disease more or less strongly during certain seasons. It ought to be added here, that some of the Irish and Scotch practitioners do not resort to the use of bloodletting at all in the treatment of typhus. Amongst these may be mentioned Dr. Mateer, and Dr. Little, both of Belfast. They seem to consider the disease as essentially one of debility. Dr. Graves, also, thinks that the proportion of cases in which general bloodletting can be practised with advantage and safety is small.

Local bloodletting may be resorted to with very uniform benefit. There is great unanimity of opinion, in regard to the safety and

the usefulness of this remedy. Scarified or dry cups, applied to the nucha or along the spine between the shoulders, have been found of great efficacy in removing or diminishing the suffusion of the eyes, the injection of the face, the headache, the delirium, and other symptoms. They constituted in nearly all the cases a part of the treatment pursued by Dr. Gerhard, at Philadelphia, in 1836. Speaking generally of dry cups, he says: "Applied in considerable numbers, and left upon the nape of the neck and between the shoulders, for twenty minutes or half an hour, they always seemed to me a more powerful remedy in nervous functional derangement not attended with inflammation than scarified cups. I have used them largely in the treatment of the apoplectic symptoms of malignant intermittent with the best effects, and resort to them with confidence as one of our most powerful means of controlling disordered nervous action."

Sec. II.—*Purgatives.* The use of purgatives in typhus fever by British physicians has been almost universal. At one of the Dublin Fever Hospitals, under the care of Dr. Cheyne, it was formerly one of the standing directions for the nurse to administer immediately to a newly-received patient, two pills composed of one grain each of calomel, scammony, and aloes; the pills to be followed in three or four hours with a purgative mixture. Nearly all the Irish writers reckon purgatives second only in importance to bloodletting, and much more generally applicable than this remedy. Some of them rely almost wholly upon them, and upon the ordinary hygienic measures, applicable to most febrile diseases. They recommend that mild purgatives, especially during the early periods of the disease, should be so administered and continued as to procure two or three discharges from the bowels daily. A small quantity of calomel usually enters into the composition of the purgative, although the action of the mercury upon the mouth is not generally considered desirable. From an examination of the opinions of the best modern observers, it is quite clear, I think, that active and drastic purging is to be avoided.

Sec. III.—*Affusions and Ablutions.* The agreement of opinion and practice in regard to the external use of water at different temperatures, according to circumstances, is hardly less general

than it is in relation to the necessity of purgatives. Dr. Percival used the cold affusion, especially in the treatment of children; pouring several gallons of cold water from a bucket, over the head and body. On account of the inconvenience of this mode, and for other reasons perhaps, the process of ablution or sponging has generally been preferred. When the skin is uniformly hot and dry, the water may be applied in this manner quite cold; but if the temperature is not much elevated, or if there is slight or partial perspiration, it is safer and better that it should be tepid. Dr. Gerhard says that, by frequent sponging, he found that he could regulate the heat of the surface with great ease, and in some degree also could moderate the cerebral symptoms. Dr. Graves, of Dublin, has found that the pain in the head, and other symptoms of over-excitement in the brain, are often more speedily and effectually relieved by applying fomentations of hot water than they are by the common cold applications. This is in accordance with the extensive experience of my friend and late colleague, Dr. Dudley, of Lexington, Ky., in the similar treatment of many local affections of a painful or inflammatory nature.

Sec. IV.—*Stimulants and Tonics.* The almost uniform experience of British observers has sanctioned the use of stimulants in the treatment of this disease; and, amongst the individual articles of this character, a very general preference has been given to wine. Some of them urge its administration earlier in the fever than others, and in more liberal quantities; but none of them, so far as I know, dispense with it altogether. Dr. Stokes, of Dublin, said, in 1839: "I feel certain, humiliating though the confession may be, that the fear of stimulants in fever with which I was imbued was the means of my losing many patients, whose lives would have been saved, had I trusted less to the doctrine of inflammation, and more to the lessons of experience, given to us by men who observed and wrote before the times of Bichat and Hunter."[1] When the cutaneous circulation is languid and the skin not hot, when the pulse is soft and feeble, and there are great exhaustion and debility, at whatever stage of the disease, there can be no doubt as to the necessity of the stimulating and supporting treatment. During some epidemics,

[1] Dub. Journ. of Med. Sci., March, 1839.

when the adynamico-congestive element in the pathology of typhus is marked and predominant, this condition of the system will often be present at the commencement of the fever, and will require the early use of stimulants and tonics. More commonly, however, this state of things attends the later period of the disease, coming on as the febrile excitement subsides; and then it must be met by the same remedies, with an activity and assiduity commensurate with the urgency of its symptoms. Dr. Gerhard, in his account of the Philadelphia epidemic of 1836, says: "It is difficult to conceive the extreme prostration in which our patients were left after a severe attack of fever. The skin is usually cool, and the pulse weak and fluttering, but there are still muttering delirium and great feebleness. Under these circumstances, wine, combined with quinine, and a nutritious diet, produced an effect which was almost magical." Dr. Stokes thinks that, in addition to the ordinary indications for the use of wine in typhus, may be placed want of energy in the action of the heart, as shown by its diminished impulse, and the feebleness or extinction of the first sound. He says that the existence of these phenomena, at an early period of the disease, has sometimes led him "to anticipate the bad symptoms, and to commence in good time the use of the great remedy;" and that, "in others, notwithstanding the existence of severe visceral irritations, the use of stimulants has been adopted with the best success from the same indication."[1] It does not appear to be necessary that wine should be given in very large quantities. The daily amount used by Dr. Gerhard, varied from four to sixteen ounces; in most cases from six to eight.

The only other articles belonging to this class of remedies, of which it is necessary to speak particularly, are the preparations of cinchona. Dr. Gerhard, in the latter stages of the disease, during the Philadelphia epidemic, and under the same circumstances that indicated the necessity for wine, employed the sulphate of quinine, given in solution, to the extent of about twelve grains in the twenty-four hours. Speaking of tonics generally, he observes: "They not only exercised a gradual and permanent influence upon the appetite and strength of the patient, but they

[1] Dub. Journ. of Med. Sci., March, 1839.

produced an immediate impression. The improvement was sometimes so rapid, that it was very obvious from one day to the next." Amongst the means for restoring, temporarily at least, the exhausted and flagging energies of the system, may be included the external application of dry heat, and the use of sinapisms. Dr. Gerhard says of these latter: "They were of great and undoubted advantage in the stage of prostration, which occurs at the decline of the fever, and certainly contributed to save the lives of several of our patients." He also found them useful in diminishing the stupor and prostration during the disease, as well as in reanimating the strength of patients who were brought to the hospital, exhausted from neglect, and a fatiguing ride from a distant part of the town. But if the fever was high, and the heat of the skin considerable, sinapisms were vastly less effectual than when the skin was cool and the patient seemed sinking from mere exhaustion.

Sec. V.—*Miscellaneous Remedies.* It would be an irksome and not very useful task to enumerate all the articles which have by one observer and another been recommended under certain circumstances and for the purpose of answering peculiar indications. I will briefly mention some few of these, the efficacy of which has been best established.

Diaphoretics seem to be of considerable service, in allaying the intensity of febrile excitement. Dr. Little, of Belfast, classes them amongst his most useful remedies. The most powerful of these has already been spoken of; I mean the cool and tepid ablution of the body. Amongst the most unexceptionable perhaps of those to be used internally, are the effervescing draughts, and the liquid acetate of ammonia.

When bronchitic or pneumonic complications have not been removed by the remedies already spoken of, resort may be had to vesication, and to the guarded use, internally, of ipecacuanha and antimonials. In some cases, where the bronchial secretion was very abundant, Dr. Henderson found great benefit from the administration, several times a day, of from half a grain to two grains of the acetate of lead, combined with a small quantity of Dover's powder, and one or two grains of squill. Dr. Graves, of Dublin, has made use of antimony in the treatment of typhus,

under peculiar circumstances, the credit of which novelty he claims as entirely his own.[1] In the latter stages of the disease, when there are in addition to other symptoms great prostration of strength, and extreme nervous restlessness and sleeplessness, he gives tartar emetic, in solution with camphor mixture and combined with laudanum. Six grains of the antimony are given in the course of the twenty-four hours. This combination, under these circumstances, he thinks possesses an almost magical power in allaying the nervous restlessness, and in procuring sleep.

In regard to the utility of emetics, there is some difference of opinion. They have been mostly used under two circumstances; first, at the very commencement of the fever; and secondly, when a relapse or an aggravation of the symptoms has been threatened at or near the beginning of convalescence, occasioned by some indiscretion of diet. Dr. Gerhard thinks that they were useful at Philadelphia, in 1836, in diminishing the violence of the fever. Dr. Graves speaks very highly of their efficacy, and very confidently also of their power, if administered within the first twenty-four hours from the time of seizure, of wholly arresting the disease.

Camphor and opium are amongst the articles which have been extensively used for the purpose, principally, of allaying nervous agitation and restlessness, and inducing quiet and sleep. As a general rule, they seem to be most effectual in accomplishing these purposes, when the general febrile excitement is not very great, and when there are no indications of irritation, or congestion of the brain. I shall conclude these directions for the treatment of typhus, with Dr. Gerhard's remarks upon these two substances. "Camphor," he says, "was certainly amongst the most useful and powerful of our remedies. We used it largely in the severe

[1] Graves's Clinical Lectures, p. 130, *et seq.*

[2] Sir Gilbert Blane says: "The head being particularly affected in this sort of fever, the patient is extremely restless and delirious, especially at night; and there is a medicine which has a most pleasing effect in procuring both rest and perspiration. This is a combination of an opiate with an antimonial medicine, which was administered in the evening with great success."—*Obs. on Dis. of Seamen*, p. 367.

The same excellent observer and philosophical physician remarks again: "In this advanced stage of the fever, in which the most common symptoms are weakness, restlessness, tremors, and low delirium, no medicine was found so much to be trusted to as opium, which here acts as a cordial as well as an anodyne and antispasmodic."—*Ibid.*, p. 380.

cases, especially those in which the ataxic nervous symptoms were very marked; and we had no reason to repent its employment. In general, there was a marked diminution of some of the most prominent and harassing symptoms. We gave the camphor in emulsion in doses of five grains every two hours, and in enema in doses of a scruple. The immediate effect was the lessening of the subsultus and tremors, for which it was chiefly administered, and sometimes the diminution of delirium. In some cases, we possessed a complete control over the subsultus, which was immediately checked by an injection containing a scruple of camphor. It would cease for some hours, but afterwards return nearly with its former severity. Still, it was a useful palliative, and, like most remedies of its class, acted as a useful balance-wheel in preserving the harmony of the system until the disease had passed through its natural course. The camphor frequently acted powerfully as an anodyne, when sleep had been interrupted by the previous disturbance of the nervous system."

Huxham is high in his praise of camphor. "Its anodyne demulcent quality," he says, "makes it vastly serviceable in quieting the *Erethism*, and bringing on composure of spirits and easy sleep, when opiates fail, nay augment the tumult and hurry."

"Opium and its preparations," continues Dr. Gerhard, "were used by us in a considerable number of cases. Dr. Pennock was the most pleased with their effects. When the insomnia had been tormenting and incessant, and the patient was exhausted by agitation and nervous restlessness, a small dose of morphia would generally calm the agitation and procure sleep. This advantage was so great, that we were induced to give opiates in cases which were opposed to our ordinary notions of the proper condition of the system for their employment. We observed no inconvenience from them, and found the morphia occasionally of so much benefit, that we should class it amongst the decidedly useful remedies. It is not a remedy which should be used in large doses; as patients with typhus are certainly more readily affected by its narcotic properties than they are in any other disease. An eighth or a sixth of a grain was the usual dose, and was enough to procure sleep. Opiates are obviously improper, when there is much dulness of intellect, attended with great suffusion of the eyes and countenance." Another positive contraindication to the use of

opium, first pointed out and insisted upon by Dr. Graves, of Dublin, is to be found, according to this writer, in a contracted state of the pupil. When this is present, he thinks opium is always injurious. Reasoning from the effects of belladonna in occasioning dilatation of the pupil, Dr. Graves was led to suppose that, given in cases of typhus attended with contraction of the pupil, it might remove the unknown condition of the brain upon which the contraction depends; and he says that he has used it repeatedly, under these circumstances, with very satisfactory results.[1]

The diet, when the fever begins to decline, should be somewhat more nutritious and supporting than under the same circumstances in typhoid fever. The contagious character of the disease should be borne in mind, and every means taken to prevent a concentration of its peculiar poison. It seems hardly necessary to insist upon the paramount importance of cleanliness, free ventilation, quiet and good nursing. There is no disease in which all these are more essential to the welfare and safety of the patient than they are in this.

The question of the positive efficacy of active medical treatment in diminishing the duration of fever and in interrupting its course, was examined in a most fair and philosophical spirit, in a very accurate manner, by William Brown, M. D., of Edinburgh, in a paper which may well be cited as a model for similar investigations, contained in vol. vii. of the "*Annals of Medicine*," for the year, 1802, edited by Drs. Duncan, Sen. and Jun. Dr. Brown shows, very clearly and conclusively, that the powers of medical treatment in arresting the disease, or in shortening its duration, are to say the least very doubtful or very small.

Hildenbrand says: "In this disease, our treatment can only be of benefit in an indirect manner; that is, in concert with the salutary efforts of the vital powers. No method yet known, whether rational or empirical, can cure the contagious typhus, either in a direct or an indirect manner; nor even abridge its ordinary and natural course, which is about fourteen days."[2]

[1] Dub. Journ. of Med. Sci., July, 1838. [2] Gross's Hildenbrand, p. 94.

# CHAPTER XI.

## DEFINITION.

THIS disease, in the present state of our knowledge respecting it, may be defined in the following terms: Typhus Fever is an acute affection, occurring at all ages of life; attacking, at least in cities, somewhat more frequently persons who are recent than those who are old or permanent residents; often transmitted directly from one individual to another; very much more common in the British islands than anywhere else, although prevailing at times in other countries, generally in the form of circumscribed epidemics; often connected with the crowding of many persons into small, dark, and poorly-ventilated apartments, amidst filth and destitution; frequently sudden, but sometimes gradual in its access; attended at its commencement with chills, usually slight and in many instances repeated; then with morbid heat of the skin, in many cases very intense and pungent; with increased quickness, with softness and feebleness of the pulse; with accelerated respiration; in many cases with the physical signs of bronchitis and pulmonary congestion; with pain in the head, back, and limbs; dulness or perversion of the powers of the mind; drowsiness or stupor; dizziness, deafness, and ringing or buzzing in the ears; morbid sensibility of the skin and muscles on pressure; extreme prostration of muscular strength; spasmodic twitchings of certain muscles; dull and stupid expression of the countenance; fuliginous flush of the face; suffusion of the eyes; with loss of appetite and with thirst; sometimes with a slightly altered tongue, but in grave cases, with a dry, red, brown, or black and fissured state of this organ; sordes upon the teeth and gums; occasional nausea and vomiting; frequently with a constipated or sluggish state of the bowels; the skin of the body and extremities being generally the seat of an abundant eruption, coming out in most cases between the fourth and seventh day of the disease, and declining at uncertain periods during the second and third week,

consisting of small spots, generally somewhat obscurely defined, and irregularly shaped, not unfrequently grouped and confluent, of a dusky, dingy red color, not elevated above the surrounding surface, and disappearing only imperfectly or not at all on pressure; the body of the patient in grave cases giving out a pungent, offensive, and ammoniacal odor; which symptoms differ very widely in their duration, in their march, in their severity, and in their combinations, in different cases; several of them being frequently wanting, but enough of them being generally present to characterize the disease; the most constant of which are the loss of strength, the stupor, the suffusion of the eyes, the fuliginous skin, and the dusky cutaneous eruption; which symptoms may either gradually diminish in severity, and finally disappear between the seventh and thirtieth day of the disease, or may increase in severity and terminate in death between the third and twentieth day from their access; the liability to a fatal termination being much less early than late in life: the bodies of patients exhibiting, on examination after death, no constant pathological changes of any of the organs; but, in a considerable though varying proportion of cases, engorgement of the vessels of the brain with moderate sub-arachnoid serous effusion; engorgement of the posterior portion of the lungs; redness of the mucous membrane of the bronchia; softening or mamellonation of the mucous membrane of the stomach; the blood being generally of a dark color, often fluid or grumous; the coagula when formed, soft and non-fibrinous; and the body in many cases running rapidly into decomposition;—which disease, thus characterized and defined, constitutes a peculiar individual affection, differing essentially from all others, although related by many analogies to typhoid fever.

# CHAPTER XII.

## BIBLIOGRAPHY.

For reasons which must be sufficiently obvious, the literature of typhus fever is mostly British. I shall enumerate only those original treatises which have fallen in my way, and which I have used, more or less freely, in making up the preceding history.

*Observations on the Diseases of the Army. By Sir John Pringle. Dr. Rush's edition. Philadelphia*, 1810. Pringle was attached to the British army, in the Low Countries, from 1742 to 1745, and also in 1747 and 1748. His experience as an army physician was mostly confined to this period of his life. The only portion of the observations of which it is proper to speak particularly here, is that relating to the *jail*, or *hospital* fever. This is short, occupying together with a reply to De Haen, only sixty pages, but worth its weight in gold. His general description of the disease, in six pages, is capital. His clear and unequivocal recognition of the specific and essential difference between the two great forms of continued fever, *typhus* and *typhoid* —called by him *jail* or *hospital* fever, and *miliary* fever—has already been referred to.

*Medicina Nautica: an Essay on the Diseases of Seamen, etc. By Thomas Trotter, M. D., etc. London*, 1803. This is a somewhat famous book—rambling, desultory, and egotistical; flaming with patriotism, as it ought to be, since its materials were "gleaned amidst the laurels of the British navy, and protected by its banners;" sprinkled with his personal difficulties with his subordinates and superiors, and sneers at Dr. J. Carmichael Smyth's nitrous fumigation, which he calls "a mock-heroic placebo" for destroying bad smells—but withal rather an agreeable and racy book, whose leaves one can at least turn over with some pleasure and a little profit. Dr. Trotter saw much of true typhus as it originates and prevails on shipboard. The origin of typhus on

board crowded ships seems very analogous to its frequent occurrence in Irish cabins.

*A Treatise on the Nature, Cause, and Treatment of Contagious Typhus. From the German of J. Val. de Hildenbrand. By S. D. Gross, M. D. New York*, 1829. Hildenbrand had extensive opportunities for the study of typhus fever, during the latter part of the last, and the early part of the present century, in the German armies connected with the wars of that period. His work is an elaborate and systematic monograph on that disease. Its great fault is that it is over systematic; there is no disease in the nosology so fixed, and constant, and uniform in its phenomena —in its symptoms, changes, march, and duration—as his simple regular typhus. "On the fourth day," he says, "there is generally a slight degree of hemorrhage from the nose; critical exacerbations take place exactly at the end of the third, and at the commencement of the seventh day; and subsequently at the end of the tenth and at the beginning of the fourteenth day," and so on. He divides the disease into eight periods. The fever which fell under his observation was probably mostly *typhus*, mingled, however, I think, more or less, with *typhoid*. This celebrated work is certainly not without its interest, but it has less positive value than I had been led to expect before reading it. In allusion to the different and opposing methods of treatment which have been advocated and employed in typhus, he quotes the adage—*Pessima medendi methodo non omnes trucidantur.*

*An Essay on the Utility of Bloodletting in Fever, etc. By Thomas Mills, M. D. Dublin*, 1816. The object of this work is indicated by its title. Dr. Mills not only makes no distinction between the different forms of fever—continued, periodical, and so on—but he even confounds with fever various local inflammations. This radical defect in regard to diagnosis, renders the book entirely worthless.

*Observations on the Prevention and Treatment of the Epidemic Fever at present prevailing, etc. By Henry Clutterbuck, M. D. London*, 1819. This book is made up, in a good degree, by an application of the author's theoretical views of the pathology of fever to the treatment of this disease. His work, containing a statement of these views, was published as early as 1807. He regards fever as an inflammation of the brain, and *so far as there is any merit* in having started the doctrine of the *local inflamma-*

*tory* origin of fevers, it belongs more to Clutterbuck than to Broussais. There is a good deal of reasoning and criticism in the book; but it is always courteous and good-tempered. The most frequent form of fever in London, during the prevalence of the epidemic, was that corresponding to the *slow nervous* fever of Huxham. He doubts whether the prevalence of fever is as directly dependent upon insufficient food and crowded and close dwellings as is commonly supposed. Dr. Clutterbuck evidently feels that he has done a signal service to medicine by founding the practice of bloodletting, in fever, upon what is called a *rational indication* or a *principle!* thus freeing it from the reproach and disgrace of being merely an empirical remedy! Alas, for the blindness and fatuity of this miserable and false philosophy! Strongly as he relies upon bloodletting, he is constantly insisting upon the necessity of great caution and discrimination in its use. This seems to have been forced upon him by his experience, in spite of the pleadings of his theory. The book is vitiated throughout by the hypothetical assumption in regard to the nature of fever, and it adds little or nothing to our knowledge of the disease.

*An Account of the Rise, Progress, and Decline of the Fever lately epidemical in Ireland, etc. By F. Barker and J. Cheyne.* 2 *vols. London and Dublin*, 1821. This work is a systematic and documentary history of the great Irish epidemic of 1817, 1818 and 1819. It is one of the most substantial and valuable general histories of disease that has ever been written: a proud and worthy monument of Irish science, humanity, and skill. It consists, in great part, of communications relating to the epidemic, made by the leading medical men of all parts of the country. No one can read these papers without being forcibly struck with the high qualities of the Irish medical mind: its sagacity, its clear common sense, its accurate observation, and, compared with that of its sister island, its freedom from the corrupting influences of systems and hypotheses.

*An Historic Sketch of the Causes, Progress, Extent, and Mortality of the Contagious Fever epidemic in Ireland during the years* 1817, 1818, *and* 1819. *By William Harty, M. B. Dublin*, 1820. The objects of this work are sufficiently stated in its title. It is in every way a worthy companion to the *history*, by Dr. Barker and Dr. Cheyne. It is written with elegance, earnestness, and ability; and it constitutes another of

the many evidences of the signal excellence of the Irish medical mind. Dr. Harty does not profess to detail the symptoms and treatment of typhus; but he enters very fully into a consideration of its causes. His views upon this subject are marked by the soundest judgment and good sense. He insists, with entire conclusiveness, upon the action of *many concurrent* causes, in its production; and he opposes, with equal success, the doctrines of systematists and exclusives. Contagion, war, famine, want of employment, personal and local uncleanliness, unventilated and crowded dwellings, are the chief amongst these concurrent causes —acting, in some instances singly, but more generally together.

*A Succinct Account of the Contagious Fever of this Country, etc., by Thomas Bateman, M. D., F. L. S., etc. London*, 1818. This is another of the many valuable essays growing out of the great epidemic of 1817, 1818, and 1819. Dr. Bateman was a good observer, in the British sense of that term, and a sound practitioner. The value of his book is greatly impaired by the absence of all distinction between the typhoid and typhus forms of continued fever—both of which, but principally the former, it is very evident, were present at the period of which he writes. He is over positive in his conclusion, that epidemic fevers always depend upon scanty and poor food. He insists strongly upon the essential identity of all forms of continued fever. He speaks particularly of the connection between *troublesome diarrhœa* and *protracted cases* of the disease—clearly enough cases of *typhoid fever*. In three autopsies, he found ulceration of the small intestines; and asks if they might not have been produced after death by putrefaction, or by the action of the acrid contents of the bowels! He insists strongly on the advantages of the cooling and antiphlogistic treatment, and dislikes antimony and opium. The last chapter is upon the subject of contagion. Its principal objects are to show that the fever is less contagious than had been generally supposed; that the poison extends only a short distance from the sick; that dilution with fresh air renders it harmless; and that muriatic acid fumigation acts to the same end.

*A Sketch of the History and Cure of Contagious Fever. By Robert Jackson, M. D. London*, 1819. This work on typhus is by the famous author of the treatise on the fevers of the West Indies. It is mostly made up of short and very loose accounts

of typhus fever, as it occurred during the latter part of the last, and the early part of the present century, in various portions of the British army and navy. It is of small value.

*Practical Observations on the Treatment, Pathology, and Prevention of Typhus Fever. By Edward Percival. Bath*, 1819. This little monograph was written by Dr. Percival after his removal from Dublin to Bath. His description of typhus is pretty full and pretty good. Some of his conclusions are loose and hasty; those, for instance, in regard to the connection of certain forms and modifications of fever with season and weather. He says he is an advocate for the humoral rather than the nervous pathology of fever. The book is vitiated throughout by a spurious *à priori* philosophy. Dr. Percival concludes with that stereotyped motto of medical books—"Opinionum commenta delet dies, naturæ judicia confirmat."

*A History of the Epidemic Fever which prevailed in Bristol during the years* 1817, 1818, *and* 1819, *etc. By J. C. Prichard, M. D. London*, 1820. This is another of the many local histories which were written by British practitioners of the last great epidemic. The author's description of the fever is sketchy and imperfect. He considers it entirely settled that typhus often originates spontaneously, from unknown causes, and also that it is frequently communicated, directly, by contagion. He takes strong ground for the old doctrine of a pestilential constitution of the atmosphere, favoring the prevalence of certain diseases during certain periods of time. "For explaining such phenomena," he says, "it is not sufficient to trace an infected ship to a particular spot, or to smell out a bog on a piece of marshy ground near some particular town."

Dr. Prichard's style is excellent, clear, strong, correct, and always to the point.

*De l'identité du Typhus et de la Fièvre Typhoïde. Par C. E. S. Gaultier de Claubry. Paris*, 1844. 1 vol. pp. 496. *The Identity of Typhus and of Typhoid Fever. By C. E. S. Gaultier de Claubry.*

The French Royal Academy of Medicine proposed, in 1835, as the subject of one of its annual prizes, to be awarded in 1837, "The analogies and the differences between *typhus* and *typhoid fever*." Instead of the prize thus offered, two *prizes* of *encouragement* were given by the Academy, the first to the work above

named, in which the identity of the *typhoid fever* of modern French writers and the *typhus* of camps and jails is maintained, and the second to M. Montault, for an Essay advocating the opposite doctrine. Both essays were ordered to be published in the Memoirs of the Academy. This work of M. de Claubry is the second edition of his prize memoir, enlarged and completed.

My own opinion in regard to this matter was very briefly but explicitly expressed in the first edition of my work. I do not see any occasion to change it. M. de Claubry has collected from various sources, histories, more or less complete, of fevers prevailing in camps, barracks, and prisons, in different localities on the continent of Europe, mostly between the years 1804 and 1815. In many instances, these fevers correspond very exactly to typhoid fever; in others, they correspond to typhus. M. de Claubry insists upon the general presence, in these fevers of the continent, called typhus, of *diarrhœa*, and *tympanitic abdomen*, and in the existence also of *intestinal ulceration*. It is very important to remember, that, in this discussion, he expressly sets aside the question of the existence of a separate disease—the British typhus—characterized by the general absence of diarrhœa and of intestinal lesions. Louis is often quoted as authority for the doctrine of the identity between the camp and jail fevers of the continent, and *typhoid* fever, and rightly enough; but he has repeatedly and explicitly declared his belief that the British typhus, occurring with nearly the same frequency, at different periods of life, rarely attended with any prominent abdominal symptoms, and not characterized by any intestinal lesion, is fundamentally and essentially unlike the typhoid fever of his own researches.

*Natural History, Pathology, and Treatment of the Epidemic Fever, at present prevailing in Edinburgh and other towns. By John Rose Cormack, M. D. London*, 1843. There prevailed at Edinburgh, in the course of the year 1843, a form of fever, differing, in many respects, from the common typhus of the country, and resembling, in some respects, the yellow fever of hot climates—particularly in the presence of yellowness of the skin, and, in some cases, of black vomit, and hemorrhages. The whole character of the epidemic seems to me to be so questionable and anomalous as to render it difficult for us to assign it its true position. Certainly, it was not the genuine yellow fever, and

many of the features of true typhus were wanting. This I suppose was the new *Relapsing Fever* of British writers.

The article on Fever, in the *Library of Practical Medicine*, is by Dr. Christison, of Edinburgh. He patriotically adheres to the old Cullenian division of fever into Synocha, Synochus, and Typhus. Dr. Christison makes the common mistake of attributing to Louis the opinion that the lesion of the intestine in typhoid fever is the pathological cause of the disease. The article has little or no value for Americans, for the simple reasons, that *typhus fever*, without lesion of the intestines, is a form of disease rarely met with in this country, except amongst emigrants recently arrived from Europe; and that no clear and well-defined difference is recognized between this and the form of continued fever generally prevalent here.

The Article in the *Cyclopedia of Practical Medicine* is by Dr. Tweedie. He recognizes no essential difference between typhoid fever, and typhus. The paper in the *Cyclopedia*, on *Epidemic Gastric Fever*, by John Cheyne, is to us much more interesting and valuable. The disease described under this name is very clearly true typhoid fever.

The more or less systematic treatises of Dr. Armstrong, Southwood Smith, and Tweedie, have already been sufficiently referred to. Many of the most valuable publications upon typhus fever are to be found in the British Hospital Reports, in the Transactions of Medical Societies, and in the pages of Medical Journals.

*The Transactions of the American Medical Association. Vol. I.* 1848. *Report of the Committee on Practical Medicine.* The author of this well-written Report is my friend and colleague, in the New York College of Physicians and Surgeons, Dr. Smith. More than half of it is devoted to an elaborate and methodical examination of the question of the identity or the non-identity of typhus and typhoid fever. Dr. Smith argues with earnestness and ability the New York doctrine.

"*Report on the Epidemic Fever in Ireland,*" *during the years* 1847 *and* 1848. *Dublin Quarterly Journal. Vol. VII. and VIII.*

This elaborate Report occupies nearly three hundred pages of the *Dublin Journal.* Its general plan and purpose are very similar to those of the great work of Barker and Cheyne. The histories of the epidemic contained in it are so general in their

terms and character as to be of little service to me in this work. It contains abundant evidence, I think, that the epidemic of 1847–8 was made up of several forms of fever. In relation to this matter, I make the following extract from the report of Dr. Seaton Reid, of Belfast.

"I have stated above that the epidemic here was constituted by the prevalence of several diseases, and I now add that in the fever portion of these we had prevailing several separate and distinct species of fever. Twelve years' connection with fever hospitals has convinced me that a very serious error has been committed by almost all the most recent writers of monographs on fever, by their denying the existence, both in this country and in England, of more than one species of that disease. This error exists in the works of Drs. Southwood Smith, M'Cormac, Ormerod, and others, and will be found pervading almost all the communications in Barker and Cheyne's report of the epidemic of 1816—1818.

"The consequence of this error has been, that we do not possess that amount of precise information regarding the history, the symptoms, the pathology, and the relative mortality of our several species of fever, as their frequent prevalence in this country would lead one to expect. In this respect the American physicians are in advance of us, for Drs. Bartlett, Jackson, and others, have not only recognized and described the several species of fever peculiar to America, but have also pointed out the difference existing between our maculated typhus, carried into their cities by our emigrants, and their own typhoid fever—the species of fever so minutely described by Louis in Paris, and which has been so often confounded with our maculated typhus."[1]

[1] Dub. Med. Journ., vol. viii.

# PART THIRD.

THE

## HISTORY, DIAGNOSIS, AND TREATMENT

OF

# PERIODICAL FEVER.

INTERMITTENT; BILIOUS REMITTENT; CONGESTIVE.

# PART III.

# PERIODICAL FEVER.

## INTERMITTENT; BILIOUS REMITTENT; CONGESTIVE.

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## CHAPTER I.

### PRELIMINARY MATTERS.

### ARTICLE I.

#### INTRODUCTORY.

Before commencing the formal description of the disease which is to constitute the subject of this Third Part of my book, it is necessary to say a few words about the names which I have placed at its head. The disease which I am here to describe exhibits itself under several forms, so considerably different from each other as to have received different appellations. Still, the disease under all its forms, in all its varieties and modifications, is a *single, individual disease;* as clearly so as typhoid or typhus fever is. It becomes necessary, then, that this disease should have its distinctive appellation—a name by which it may be designated and known. I have accordingly adopted the term—not a new one—*Periodical Fever*, as more descriptive and appropriate than any other, and entirely unexceptionable. *Periodical Fever* is the integral, individual, nosological disease; *Intermittent Fever; Bilious Remittent Fever;* and *Pernicious Intermittent* or *Congestive Fever*, are the three principal *forms*, or *varieties*, in which the disease shows itself.

I have felt a little embarrassment in deciding upon the best and most suitable method of procedure, in describing the disease thus designated and divided. The three leading varieties have

many elements in common; they are branches springing from the same root; but notwithstanding this, they differ in some respects so widely from each other that they have often been regarded as specifically distinct and separate diseases, and in order to get any clear and adequate conception of them they must be separately and individually described. If this description is extended, in detail, to their entire natural history, it will lead us into a great deal of tedious and unnecessary repetition; and it would be very difficult to convey to the reader anything like a complete and satisfactory idea of them, by attempting to carry along together the description of the several varieties—endeavoring to put into the same portrait various and differing expressions. Amidst these difficulties, the best course seems to me to be this—to give, in the first place, a full and detailed description of one of the forms of periodical fever, comprising in this description all the phenomena and relations that are *common to all the forms;* and then to point out only the peculiarities and characteristics of the remaining varieties. Which of the three principal forms of periodical fever we choose for this more elaborate and formal description, is not altogether a matter of indifference; and it would probably strike one, at first sight, that this choice would naturally fall upon *intermittent fever*, as the simplest and least complicated of these forms—as the *type-variety*, in some degree, of the disease—and, for this reason, better adapted than the others to exhibit its characteristic features and its true nature. I am satisfied, however, that this view is not the correct one; and that our purpose will be much more successfully accomplished by giving a full description, in the first place, of the *bilious remittent* variety; filling up and completing the picture, subsequently, by introducing the lights and the shades that mark the other forms. The principal reason for making choice of this variety, for this purpose, consists in the fact that it embraces a larger number of the phenomena and relations which enter into the composition of the entire disease than either of the other varieties.

The sources of my materials for the history of periodical fever will be indicated as I go along. I may mention here, however, that the most valuable of these materials are derived from French and American observers. The British Islands are not, to any great extent, the seat of periodical fever; and although some

British writers have left us excellent general descriptions of the disease, as it shows itself in the southern and tropical colonies of the British empire, these descriptions are less elaborate and complete than those of some of the more recent French and American physicians. The earlier classic authorities upon this subject were the great Italian writers—Torti, Baglivi, Lancisi, and Ramazzini. But their descriptions are generally inaccessible here, and they are of course but little known; it should be said further, that they are quite deficient in pathological details. I do not know that the modern Italians have done anything in this department in any way worthy their illustrious predecessors. Italian medicine, like Italian art, Italian science, Italian poetry, and Italian character, has fallen from its high estate, and partakes in the general lethargy that broods over that beautiful land.

## ARTICLE II.

### NAMES OF THE DISEASE.

There are not many diseases with so few synonymes as this variety of periodical fever, if we except those names that have been given to it on account of its geographical relations. Thus, in common with the other grave forms of periodical fever, it has been called *Walcheren* fever, *Hungarian* fever, *African* fever, and so on; in India, it is frequently called jungle or hill fever. It should be added that it has frequently been confounded, especially by British writers, with the yellow fever, and designated by some of the many names which have been applied to the latter disease. Its most common names are these—*Remittent Fever; Bilious Fever;* and *Bilious Remittent Fever.*

# CHAPTER II.

## SYMPTOMS.

### ARTICLE I.

#### MODE OF ACCESS.

THE onset of remittent fever is almost always abrupt, formal, and well marked. This onset, according to many observers, is not usually preceded by any precursory symptoms; according to others it is, if not generally, at least in many instances, ushered in by such symptoms. Dr. William Currie says that the fever makes its attack, after the existence for a day or two and sometimes much longer of a disagreeable sense of languor and debility.[1] Dr. Boling, in his excellent paper on the remittent fever of Southern Alabama, says that, although the attack sometimes takes place without any premonitory symptoms whatever, it is most frequently preceded for a day or two by slight headache, want of appetite, bitter taste in the mouth in the morning, pains in the joints, and a general feeling of discomfort and uneasiness.[2] Dr. Dunlavy, in a paper on the bilious fever as it prevailed in the town of Hamilton and in its vicinity, in Ohio, during the summer and autumn of 1824, remarks that, in some cases, patients complained of pain in the head, sickness of the stomach, occasional vomiting, and bitter taste, for several days previous to the occurrence of a chill. If examined at this time, their tongues were found more or less furred, with some frequency of the pulse. During the prevalence of the disease, he met with many persons having a furred tongue, who were not aware of any indisposition; and he adds that this symptom foreboded an attack of fever, which very certainly sooner or later occurred, unless prevented

[1] Obs. on Causes and Cure of Remitting Fevers, p. 45.
[2] Am. Journ. of Med. Sci., April, 1846.

by a timely use of evacuant medicines.[1] Senac says: "The access of the chilly fit is usually preceded by various phenomena. These are, a general lassitude and heaviness, a sense of anxiety, a yawning and stretching, a paleness, and sometimes a disposition to sleep."[2]

## ARTICLE II.

### FEBRILE SYMPTOMS.

SEC. I.—*Chills.* The formal commencement of the disease is nearly always marked by a distinct rigor or chill. This varies in severity and duration in different cases: sometimes it is slight and transient, at others it is extremely severe, and prolonged for two or three hours. Senac says: "The chilly fit puts on a variety of forms; sometimes, for instance, beginning at the feet, at other times about the scapulæ, and again in the back, it runs through the whole body, in a manner resembling small streams of water poured irregularly in every direction."[3] According to Dr. Boling, the initiatory chill is generally slight; sometimes it is a well-marked ague, while at others it consists merely in a sensation of coldness, felt especially when the patient turns in bed, or in any way disturbs his covering.[4] In some cases, there is only a single chill; in others, the chill is repeated, usually with diminishing severity, once, twice, three times or more in the course of the disease. Dr. Boling says: "Where the attack is purely remittent from the beginning, a second well-marked ague hardly ever occurs; though in all cases whether the first exacerbation was ushered in by an ague, or merely by slight rigors, a recurrence of the latter in a very slight degree frequently precedes the second and third, and occasionally, even the fourth and fifth exacerbations. Where the fever is of the double tertian type, the first and third perhaps the fifth exacerbation may be ushered in by tolerably distinct agues, while the second and fourth may be preceded by but the very slightest sensation of coldness if any."[5] Dr. Stewardson says: "The recurrence of the chill was subject to great diversity: either there were none after the first, or they

[1] West. Med. and Phys. Journ., vol. i. p. 142.
[2] Caldwell's Senac, p. 24.
[3] Caldwell's Senac, p. 24.
[4] Am. Journ. Med. Sci., April, 1846.
[5] Ibid., April, 1846.

recurred at intervals, most commonly of twenty-four or forty-eight hours, for the first few days, and then disappeared altogether, or again reappeared towards the conclusion, or during convalescence; or, finally, showed themselves at various intervals throughout the whole course of the disease.[1] Dr. William Currie says: "After the second paroxysm, and sometimes after the first, the fever is seldom preceded by a cold stage."[2]

Sec. II.—*Remissions, or Type.* This disease is so uniformly and so strongly marked by a repetition or recurrence of certain symptoms and states of the system, more or less regularly periodical, that one of its qualifying terms has been derived from this circumstance. At certain periods of the day, there is an augmentation in the intensity of all or nearly all the symptoms of the disease, sometimes preceded and at other times not preceded by the chill. This increase of the severity of the symptoms constitutes what is called the *paroxysm* of the fever, or its exacerbation. Following this period, and between it and the next, there is a general diminution in the activity of the morbid processes and their manifestations, constituting what is called the period of *remission.* When these paroxysms and remissions occur, each once in twenty-four hours, the type of the fever is said to be *quotidian;* when they occur once in forty-eight hours, the type is called *tertian;* when once in seventy-two hours, it is called *quartan,* and so on. The most common type is the quotidian, or more strictly, perhaps, what has been called the double tertian. In this form, there are a paroxysm and a remission during each twenty-four hours; but the paroxysm of one day differs in severity or in some circumstances from that of the preceding and of the following day, and agrees with that of the third day. The paroxysms of the alternate days correspond to each other. Besides these, the most common, there are occasionally other varieties of type. Sometimes, for instance, in the tertian form, there are three paroxysms and three remissions, instead of one or two during each period. This is the semi-tertian of some writers; it is the triple tertian of Cleghorn. The other varieties it is hardly necessary to enumerate. The term *true* has been applied to those

[1] Am. Journ. Med. Sci., April, 1842. [2] Currie on Rem. Fevers, p. 46.

forms of the disease in which the duration of the paroxysm does not exceed twelve hours; when this is considerably protracted, the fever is called *spurious;* and *subintrant*, when the paroxysms nearly run into each other.

It is alleged by most observers, that the commencement of the paroxysm occurs much more frequently at certain periods of the day than at others. Dr. William Currie, for instance, says the first attack of the fever is usually between eight and eleven o'clock in the forenoon.[1] Dr. Cleghorn, in his admirable little Treatise on the Diseases of Minorca, makes the following remarks upon this point in the history of remittent fevers. "Some double tertians begin in this manner: on the evening of Monday, for example, a slight fit comes on, and goes off early next morning; but on Tuesday, towards the middle of the day, a more severe paroxysm begins, and continues till night. Then there is an interval to Wednesday evening, when a slight fit commences a new period of the fever, which proceeds in the same manner as the first. In most double tertians, the patient has a fit every day of the disease; the severe one commonly appearing at noon on the odd days, the slight one towards evening, on the even days."[2] Dr. James C. Finley, in a paper on the Autumnal Fever of Georgia, says, that "the type is uniformly double tertian, the paroxysms recurring with the greatest regularity; one paroxysm commencing in the morning, and manifesting a disposition to terminate in the evening of the same day; the other commencing on the afternoon of the following day, and continuing through the greater part of the night." Dr. Finley says, further, that "there is a very marked difference in the character of these two paroxysms; that which commences in the morning being always more violent and dangerous than that which comes on in the afternoon of the next day."[3] Dr. Boling thinks that the period of attack will depend very much upon the time of the patient's exposure to the exciting cause, but he says distinctly that, in fevers of the double tertian type, the exacerbations will, in a large majority of cases, be found to occur alternately in the fore and after part of the day.[4] It has often been alleged that the usual period of access varied with the different types of

[1] Currie on Rem. Fever, p. 45. [2] Cleghorn on Dis. of Minorca, p. 90.
[3] West. Journ. Med. and Phys. Sci., vol. iii. p. 175.
[4] Amer. Journ. Med. Sci., April, 1846.

the disease, occurring early in the morning in the quotidian type, between ten o'clock and noon in the tertian, and between three and five o'clock in the afternoon in the quartan. In relation to this subject, M. Maillot has published the following curious and interesting table. I omit his distribution of the cases according to the month in which they occurred. It will be noticed that, in the two principal types, two-thirds of the cases have their access between midnight and noon; that the *maximum* hour is ten o'clock A.M., and the *minimum* period from nine P.M. to midnight. M. Maillot did not find that the period of access was in any appreciable degree influenced by the season, or the temperature of the weather.

*Table showing the hours of access in periodical fever.*

QUOTIDIAN TYPE.

*From Midnight to Noon.*

| Hour, | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of cases, | 12 | 15 | 17 | 18 | 31 | 51 | 82 | 118 | 168 | 239 | 137 | 206 | 1089 |

*From Noon to Midnight.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70 | 118 | 63 | 58 | 54 | 47 | 19 | 22 | 8 | 21 | 10 | 8 | 493 |

TERTIAN TYPE.

*From Midnight to Noon.*

| Hour, | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of cases, | 12 | 5 | 12 | 30 | 22 | 38 | 68 | 63 | 86 | 87 | 72 | 55 | 550 |

*From Noon to Midnight.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 39 | 23 | 27 | 11 | 11 | 9 | 10 | " | 8 | 4 | 3 | 180 |

QUARTAN TYPE.

*From Midnight to Noon.*

| Hour, | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of cases, | 2 | " | " | 1 | 2 | " | " | " | " | " | 8 | 5 | 18 |

*From Noon to Midnight.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| " | 3 | 4 | 1 | 2 | 1 | 1 | " | " | " | 1 | " | 13 |

No distinction is made in the above table between the different forms of periodical fever, and the double tertian is not recognized as a distinct type.[1]

[1] Traité des Fièvres Intermittentes. Par F. C. Maillot, p. 414.

In regard to the relative frequency of the leading types, I find the following positive and valuable statement in the excellent work of Maillot. His remarks apply, without discrimination, to the three great forms of periodical fever, intermittent, remittent, and congestive. At Bona, in Africa, of two thousand three hundred and thirty-eight cases, fifteen hundred and eighty-two were quotidian, seven hundred and thirty were tertian, and twenty-six were quartan in their type; at Algiers, of seven hundred and seventy-six cases, five hundred and ninety-nine were quotidian, one hundred and seventy-one tertian, and six quartan. In France, according to M. Nepple, of three hundred and eighty-six cases, one hundred and ninety-eight were quotidian, one hundred and fifteen tertian, and fifty-nine, quartan. Thus, of three thousand five hundred and eighty-six cases, two thousand three hundred and seventy-nine were quotidian, eleven hundred and sixteen were tertian, and ninety-one were quartan in their type. M. Maillot makes no distinction between the simple quotidian and the double tertian type.[1]

It would seem that there is sometimes a tendency to a weekly revolution in the phenomena of this disease. Dr. Forry says: "That intermittent fever has a tendency to a septenary revolution, is a fact that was frequently verified in Florida, under the writer's observation; and that too in a manner so unequivocal, that it attracted the notice of the common soldier. At these septenary periods, either after the seventh, fourteenth, or twenty-first paroxysm, the disease has a disposition to terminate spontaneously."[2]

Sec. III.—*State of Surface.* The condition of the skin, like most of the other symptomatic phenomena of bilious fever, varies very much with the several stages and periods of the disease. Cleghorn says, that the cold fit is generally followed by an intense heat over the whole body, which raises the mercury in the thermometer to the 103d or the 104th degree.[3] According to Dr. Stewardson, the heat of the skin, during the exacerbations, though often great, is not often pungent.[4] Dr. Boling seems to have studied this matter more thoroughly and minutely than any other

[1] Traité des Fièvres Intermittentes. Par F. C. Maillot, p. 9.
[2] Amer. Journ. Med. Sci., Oct. 1841.
[3] Dis. of Minorca, p. 94.
[4] Amer. Journ. Med. Sci., April, 1842.

observer, and I accordingly avail myself of his full description. "In the forming stage of the first exacerbation, the extremities generally feel cool or cold to another person, though this is not always the case, even when the complaints of suffering from cold are loudest on the part of the patient. The temperature of the chest and abdomen, even at this time will generally be found somewhat above the healthy standard, and that of the head considerably so. Soon, however, the general temperature increases, and the whole surface becomes hot, and a vivid flush makes its appearance, not only on the face, but occasionally over the whole body, in patients at all plethoric, or of a sanguine temperament. This continues for a longer or shorter period, dependent in a great measure on the type the fever is about to assume; for it will be shorter in the paroxysm of a quotidian than of a tertian, when the heat and redness of the surface decline, and a perspiration appears, in the form at first of the slightest moisture between the under jaw and neck, gradually becoming general and free. In the succeeding paroxysms, the heat of the body is still about the same; but if the case be at all protracted, there is after a certain period a tendency to coolness in the extremities, even during the height of the exacerbations; but unlike the coolness attending the early rigors, the patient is unaware of it, and is much distressed with a sensation of burning heat. This coolness of the extremities gradually increases with each succeeding exacerbation, after it has once appeared, and in cases far advanced towards a fatal termination frequently extends nearly to the shoulders and groins, the surface of the abdomen and chest being most intensely hot at the same time. The perspiration attending the remissions becomes less and less in each, and in the advanced stages of an aggravated case is replaced by a clammy exudation from the cold extremities, while the body is dry and parched. The vivid flush of the surface is much less apparent with each succeeding exacerbation, and in its place a very slight shade of a purple or livid tint makes its appearance —more obvious in the face than elsewhere. Frequently, however, the skin becomes yellow: the shade, scarcely perceptible at first, gradually deepening over the whole body, but not commencing and proceeding from any particular point, as is said to be the case by Lempriere, Bancroft, Mosely, and others, in the yellow fever. It is, however, for a very obvious reason, most fre-

quently first noticed in the conjunctiva. Petechiæ and vibices are never seen, though sudamina are occasionally observed in protracted cases. They generally appear only about the neck and breast, and are much more common with children than with adults."[1] It should be mentioned that Dr. Boling's remarks have reference especially to the severer forms of the disease.

SEC. IV.—*Heart and Pulse.* The pulse is more or less accelerated during the febrile paroxysms, rising frequently to 120 or 130 in the minute, and falling nearly to its natural standard in the intervals. Of eleven cases treated by Dr. Gerhard, at the Pennsylvania Hospital, in 1834, and all terminating in recovery, the pulse was over 100 in only two. It is very rarely that it has the hard tense feel of the open inflammatory pulse. Sometimes it is moderately hard and strong, or jerky; but more commonly it is rather soft and feeble. Towards the close of fatal cases, the pulse usually becomes excessively rapid, "becoming smaller and thready, and at length imperceptible."[2] Dr. Boling remarks, that the action of the heart is laboring and strong, its sounds louder than natural, and its impulse more forcible.

## ARTICLE III.

### THORACIC SYMPTOMS.

Very few writers upon remittent fever make any formal mention of symptoms connected with the respiratory organs; and it seems quite certain that thoracic complications are rare and accidental. Bronchitis, sometimes with mucous rattle, but oftener without it, occurred in twelve of Dr. Swett's thirty-four cases; and he thinks that pneumonia was the immediate cause of death in two instances. Dr. Stewardson speaks of the general infrequency of this class of symptoms; and Dr. Boling merely mentions the moderate acceleration of the breathing usually accompanying febrile excitement.

[1] Amer. Journ. Med. Sci., April, 1846.

[2] Dr. Swett, in his account of thirty-four cases treated at the New York Hospital, in 1844, says that, during the paroxysm, the pulse usually ranged from 106 to 112, falling in the intervals to 96 or 100.

## ARTICLE IV.

### CEREBRO-SPINAL, OR NERVOUS SYMPTOMS.

SEC. I.—*Headache; Pains in the Back and Limbs.* Pain in the head, back, and limbs is one of the most constant, and in many cases one of the most distressing accompaniments of this disease. Cleghorn says he has sometimes known this pain so intolerable, and accompanied with such inexpressible anxiety, that persons of the soundest judgment and morality have been tempted to destroy themselves to get rid of it.[1] Dr. Stewardson found headache present in all but one of sixteen cases, terminating in recovery. It generally commenced on the first day of the fever, was most severe during the exacerbations, and commonly declined after the middle period of the disease, at least during those hours of the day when the patients were visited.[2] Dr. Boling gives the following account of this symptom as it shows itself in severe cases. "As the febrile excitement is developed in the first exacerbation, pain in the head becomes violent and distressing, and is of a throbbing character. It is generally in the forehead, just above the frontal sinuses, but is also occasionally felt in the occipital region. During the earlier remissions it either abates or entirely subsides, but later is very distressing during the remissions. At this period, too, it loses its throbbing, pulsating character, and is fixed and steady."[3]

SEC. II.—*Mind.* Decided delirium is not a common symptom, at least in mild cases, and in those of moderate severity. There was slight delirium in only one case of eleven, terminating in recovery, at the Pennsylvania Hospital, in 1834. Of fifteen cases, also terminating favorably, in the same institution, observed by Dr. Stewardson, delirium was noticed in only two. In one it was slight; in the other violent, and in both confined to the exacerbations. Of Dr. Swett's thirty-four cases, at the New York Hospital, there was delirium in five. Dr. Boling's account of this symptom, as of many of the others, is more particular and minute. It is important to remember that he is speaking only of

[1] Dis. of Minorca, p. 132.
[2] Amer. Journ. Med. Sci., April, 1842.
[3] Ibid., April, 1846.

grave cases, although always of the simple and not the malignant or congestive form of the disease. "Where the febrile excitement runs high," he says, "slight temporary delirium occurs, even during the first exacerbation. It is most frequently associated with a drowsy stupor, during the partial waking from which it is manifested, and passes away as soon as the patient is sufficiently roused to bestow his attention. This delirium, like the dry tongue in the first exacerbation, may be present in cases of but moderate severity, and under the use of a gentle cathartic, a small bleeding, or the spontaneous evacuation of the stomach, disappear, not to return again in the succeeding exacerbations, although the violence of the disease may not be subdued; and, indeed, in cases in which the symptoms generally are on the increase as regards severity, it may remain absent during several exacerbations, and then again appear, or may not return again at all, should the patient recover; or, should he die, but in the last exacerbation. With the exception of this temporary delirium just spoken of, a patient is apt to pass through several exacerbations without any intellectual aberration. It generally occurs earlier in sanguine, plethoric subjects, and in such is less indicative of danger. Once fairly established, with the exceptions above noted, like all the other phenomena of the disease, while the other symptoms are on the increase, this one is also progressive, and becomes worse and worse with every exacerbation. During the remissions, at least the earlier ones, the delirium disappears, and even in the later ones generally abates considerably in violence, though but shortly before a fatal termination. An amendment once commenced, in a case where the delirium disappears during the remission, this symptom scarcely ever returns, however slow the progress of the cure; but where the delirium remains during the remission, it may continue even after a decided amendment has taken place, abating more or less every day till its complete disappearance, which always takes place during the hour of remission. The delirium is scarcely ever so violent, except in a few malignant cases that run through their course very rapidly, as to require any restraint of the patient. In a very few protracted cases only does it assume that character called low and muttering, and is seldom if ever attended with picking the bedclothes, or subsultus tendinum, though occasionally the hands are extended in sleep, as if

SEC. II.—*Appetite and Thirst.* The testimony of observers is very uniform in regard to the entire absence of appetite for food. Dr. Boling says: "From the commencement of the attack, during nearly the whole period of the disease, the disgust for food is almost insurmountable. It is only during one or two of the earlier and more complete remissions that a patient can be induced to swallow any kind of nourishment, and that only at the solicitation of friends, and not from any desire of his own. Towards the close of a case that is taking a favorable turn, and before the establishment of complete convalescence, he will swallow a few spoonfuls of light broth, or something of that character; and even then not to gratify any desire of his appetite, but from a persuasion that nourishment is necessary for him in his weak state. When convalescence is completely established, the appetite is generally craving, and the strength is rapidly restored. In the case of negroes, the disgust for food is a much less prominent symptom.[1]

The thirst, the desire being for *cold* drinks, is most excessive from the very first paroxysm, and this is almost the only symptom of the disease which does not increase with the repeating exacerbations, so long as the disease may be considered unchecked. But although the thirst in the first exacerbation is, as a general rule, so great as to leave no room for it to increase, it is not so with the remissions. During the first remission the thirst abates somewhat, but this abatement is less and less with each one that succeeds, and after a while, even during the period of remission, the thirst is most excessive, and large draughts will be rapidly and in quick succession swallowed, although with the confirmed assurance that in a few minutes they must be returned. Pure cold water is the drink most generally preferred, and if any addition is at all desired, it is always something sour, such as vinegar, tartaric acid, or lemon-juice.[2] Dr. Baldwin, in his account of the bilious remittent fever which prevailed in Burke County, Georgia, in 1831, says that a bitter taste in the mouth, and an intolerable thirst were universally present.[3] Bailly says: "One must be

[1] This peculiarity in the case of negroes was noticed by Dr. Gerhard in the epidemic typhus of Philadelphia, in 1836, and has already been spoken of in this work.

[2] Amer. Journ. Med. Sci., 1846.

[3] Ibid., Feb. 1832.

sick at Rome, in order to know the happiness of drinking cold water."[1]

SEC. III.—*Nausea and Vomiting.* These symptoms are amongst the most constant phenomena of the disease. Vomiting very often accompanies the first rigor; and in most cases is more or less frequently repeated, especially in the paroxysms, during the whole course of the disease. The fluids ejected from the stomach are usually of a greenish or yellowish tinge, varying in shade and intensity in different cases. Dr. Boling says that, in grave cases, and in the advanced periods of the disease, although the efforts to vomit become more incessant, the matter vomited diminishes in quantity, so that frequently, in hours of straining and retching, nothing is thrown up but the drinks which had recently been swallowed.

SEC. IV.—*Epigastrium and Abdomen.* Another symptom belonging to this strongly marked group, and almost invariably present, is pain or tenderness of the epigastrium, increased by pressure. There is also some degree of fulness, or a sense of fulness, weight, tension, and oppression, extending across the hypochondria, especially on the left side, in the region of the spleen. This feeling is often quite distressing, and adds much to the discomfort of the patient. The epigastric uneasiness and oppression are often relieved, temporarily at least, according to Dr. Boling, by the act of vomiting. True tympanitic distension of the abdomen is of rare occurence.[2] Enlargement of the spleen

[1] Traité des Fièvres Intermittentes, p. 137.

[2] Dr. Boling has an observation somewhat opposed to the statement which I have considered myself justified in making in relation to this symptom. "Sometimes," he says, "in cases of a very violent character, this tympanitic distension supervenes early in the disease under the action of a few small doses of purgative medicine, *and accompanies almost always a spontaneous diarrhœa, which, in a few cases, makes its appearance early.*" In the absence of any distinct and conclusive information upon this point, one can hardly avoid the suspicion that the cases thus marked by *tympanites* and *spontaneous diarrhœa* were cases of *typhoid fever.* A previous remark by Dr. Boling justifies, I think, the suspicion which I have ventured to suggest. *Towards the close of protracted cases,* he says, there is sometimes an obscure sensation of pain *between the umbilicus and the right iliac fossa.* At any rate, and be this as it may, the general absence of this symptom is expressly admitted by Dr. Boling, as well as by other observers. Dr. Gerhard found it in only two of eleven cases at the Pennsylvania Hospital. Dr. Stewardson says, in the history of his cases, that flatulent distension, except in a slight degree, was not noticed in a single instance; and Dr. Swett says that tympanites, even in the cases where prostration was most marked, seldom or never existed.

is rendered manifest by the increased and extended dulness on percussion over the region of this organ.

Sec. V.—*Bowels.* The bowels are, to say the least, generally free from any considerable degree of irritation, so far as this is indicated by pain or diarrhœa. Of Dr. Gerhard's cases at the Pennsylvania Hospital, there was diarrhœa in only one in seven. Dr. Stewardson, in his account of seventeen cases, which were treated at the same institution, in 1838, all terminating in recovery, says: "The bowels were generally costive, the purgative medicines which were given both before and after admission rarely occasioning hypercatharsis. In a few instances, spontaneous purging was present near the commencement of the disease, and continued for a few days; but subsequently the bowels were either regular or costive, unless when operated on by medicine."[1] Dr. Swett remarks that diarrhœa was absent in almost every case, that all his patients required purgatives at some period of the disease, and that they usually acted freely without leaving any symptoms of irritation behind them. Dr. Boling thinks that this disposition to sluggishness in the bowels has been over-stated, and that, although spontaneous purging may be rare, there is still a strong tendency to diarrhœa—a tendency rendering great caution necessary in the use of cathartics, especially after the first or second exacerbation. It is very probable that the irritability of the bowels may be greater during certain periods, and in certain localities, than in others; and it is very important, furthermore, to remember that Dr. Boling expressly excludes from his description the entire class of mild or moderate cases.

The character of the discharges from the bowels seems to vary very considerably in different seasons, and in different localities; and not unfrequently, also, during the different periods or stages of the disease. The more general, and to a certain extent characteristic appearance of the stools, is that which has been denominated *bilious*. These stools vary in color, from different shades of yellow and green, to olive, brown, and almost black. Sometimes this bilious quality of the discharges is entirely wanting. In the fever of 1831, in Dallas County, Alabama, Dr. Heustis found, early in the season, the discharges from the bowels mostly

[1] Amer. Journ. Med. Sci., April, 1842.

of a light clay-colored complexion, with very little of the black, green, or bilious discoloration so generally present. In a few cases that occurred after the commencement of cool weather, the stools were highly colored, of a dark green, olive, and almost black; becoming in the progress of the complaint of a lighter hue, between an olive and a brown, and of a gelatinous, sleek, and oily appearance, but not peculiarly offensive.[1] Dr. Swett says: "In many the secretion of bile, as marked by the stools, was much increased in quantity or altered in its color, so as to constitute one of the most striking symptoms of the disease. This was observed in fifteen or about one-half the cases; *while it was also noticed in many, even of the worst cases, especially among those which were admitted early in the season, that no apparent deviation from the healthy standard took place.*"[2] Lumbrici frequently accompany the discharges, especially amongst negroes and children.[3]

SEC. VI.—*Urine.* Observers are not agreed amongst themselves in regard to the state of the urine. Cleghorn says: "The urine, whether made in the time of the paroxysm or interval, is always clear, frothy, and of a deep red color, without any separation."[4] Senac lays greater stress on the appearance of the urine, as characteristic of periodical fever. "Masked intermittents," he says, "may be no less certainly detected, as was formerly observed, by the color of the urine. In that disease the urine is very often lateritious during the remission, which is a sign almost infallible that the disease belongs to this family."[5] According to Dr. William Currie, the urine during the cold stage is pale, copious, and crude; but as soon as the hot stage is established, and during its height, it becomes high-colored; while in the remission it is thick and cloudy, and sometimes deposits a brick-colored or brownish mucous sediment.[6] Dr. Stewardson says: "The urine, where noted, was mostly clear, sometimes straw-colored, at others highly colored, reddish, or of a more or less deep yellow, approaching to orange."[7] Dr. Swett found the urine generally natural in appearance, and without sediment

[1] Amer. Journ. Med. Sci., Feb. 1832.
[2] Ibid., Jan. 1835.
[3] Boling on Rem. Fever.
[4] Dis. of Minorca, p. 133.
[5] Caldwell's Senac, p. 122.
[6] Currie on Bil. Fev., p. 46.
[7] Amer. Journ. Med. Sci., April, 1842.

throughout the disease.[1] Dr. Boling, on the other hand, says: "The secretion of urine is scant and highly colored and muddy, during the exacerbation, from the coloring matter floating suspended in it; and sometimes late in the disease is of a deep reddish-brown, possessing apparently a degree of consistency greater than natural, and is passed with pain. In the remissions it is more copious and transparent, but throws down a muddy flocculent deposit sometimes; at others a red, pulverulent matter."[2]

[1] Am. Journ. of Med. Sci., Jan. 1845. [2] Ibid., April, 1846.

# CHAPTER III.

## ANATOMICAL LESIONS.

### ARTICLE I.

#### LESIONS OF THE THORACIC ORGANS.

SEC. I.—*Lungs.* The substance of the lungs, and the mucous lining of the air-tubes, are the seat of no constant or important lesion. Congestion of the former, especially in their posterior portions, and more or less redness of the latter, are found in a certain proportion of instances. Two of Dr. Swett's cases were complicated with pneumonia. Bailly mentions the lungs in only a part of his cases, and in nearly every instance where he does so, calls them healthy. Maillot found the lungs as free from disease as after death from any acute affection.

SEC. II.—*Heart; Blood.* The muscular tissue of the heart is frequently softened and flabby. Dr. Stewardson found this organ flabby in three of the six cases in which it was particularly examined, and combined with this flabbiness there was diminished consistence at least in two cases. In nine of Anderson and Frick's twelve cases, the heart was examined, and in all of them its muscular tissue was found to be more or less softened. Maillot found the heart in six cases pale and softened, once of a yellowish color and flabby, once flabby with dilatation of the left ventricle, and in four cases with hypertrophy of the walls of the left ventricle.[1] In another place, Maillot calls the paleness and flabbiness of the heart, mentioned above, "*truly remarkable.*"[2] Dr. Swett does not seem to have noticed particularly this alteration. In the three cases of Dr. Stewardson, where the heart was softened, its inner membrane was of a reddish brown, deep red,

[1] Traité des Fièvres Intermittentes, p. 286. [2] Ibid., p. 291.

or violet color; in Anderson and Frick's cases, this membrane is generally described as pale. In regard to the nature of the foregoing lesions, I can only repeat what has already been said upon the same subject in connection with typhoid and typhus fever.

The state of the blood in remittent fever has not yet been made the subject of sufficiently extensive or accurate study to justify us in saying anything very positive about it. Dr. Swett does not notice the blood at all, except to say that in one case, examined in the heart, it was fluid. Bailly takes no special notice of it. Dr. Stewardson examined the blood contained in the cavities of the heart in five cases: in one, there were black coagula, mixed with red serum; in the others, fibrinous coagula, soft in two, semi-transparent and greenish in another, and generally small. No large, firm, fibrinous coagulum was found in a single instance.[1] The state of the blood in the heart is mentioned in only one of Anderson and Frick's cases; in this there were large fibrinous concretions.

## ARTICLE II.

### LESIONS OF THE CEREBRO-SPINAL APPARATUS.

SEC. I.—*Brain, and its Envelops.* I do not think that the condition of the brain and its membranes, after death from remittent fever, has yet been satisfactorily determined. It was examined by Dr. Stewardson in five cases. "The sub-arachnoid effusion was either entirely wanting or moderate, except in one case where there was a considerable quantity of reddish serum. In the same case, the ventricles contained an ounce of bloody serum, whilst in two of the others they were empty, in a third nearly so, and in the fourth contained scarcely a drachm of fluid. In one, the walls of the ventricles were of a yellow color. The pia mater was deeply injected in one case, in which also there appeared to be a slight effusion of blood into the cells in a small circumscribed space; its veins much distended posteriorly in another. The cortical substance was of a deep shade in two cases, and in none is it mentioned as being paler than natural, or presenting other alteration. In two cases, the medullary substance was natural;

[1] Amer. Journ. Med. Sci., April, 1841.

in a third, it felt pasty without giving the sensation of softness; whilst in a fourth it was soft and pasty, being at the same time dry and of milk white color, with few bloody points. In a fifth its color was a dirty white, mixed with a fain treddish brown—its consistence natural, with the exception of a slight central softening."[1] Dr. Swett describes the substance of the brain as natural in four of his five cases; in the other, the central portion of the left side was somewhat softened. In two cases, there was slight sub-arachnoid effusion. Neither Dr. Stewardson nor Dr. Swett seem disposed to regard these cerebral lesions as in any degree important, or peculiar to this disease;—they look upon them as wholly accidental, or at least such as occur with the same frequency and to the same extent in other acute febrile affections. This conclusion may prove to be sound; but I do not think that we are justified in adopting it without more extensive researches. In ten of the twelve cases reported by Anderson and Frick, the brain and its membranes were examined, and in all of them there was more or less alteration. In eight, the substance of the brain was more or less injected; in two, it was natural. In two cases, the pia mater was healthy; in the others, it was injected, or its meshes infiltrated with serum, or both; in one case, there were three ounces of serum between the arachnoid and dura mater.[2] In their connection with this subject, I have examined and analyzed with some care the cases reported by Bailly. They occurred at Rome, during the summer of 1822. It is important to remark that they all belonged to the variety of *pernicious intermittents*, as they are called; in other words, they were cases of *congestive fever*, as were also many of those the lesions of which have already been described. Most of them were of the *comatose* form; four only belonging to the strongly marked *cold* or *algid* variety. In twenty-five or twenty-six cases, the prominent cerebral symptoms during the paroxysms were stupor or coma—the latter often profound in all—in many, spasmodic contractions of the muscles of one or both arms; and in some few, delirium. The cerebral symptoms were also present in the algid cases, but less constantly and less strongly marked. In seventeen of the thirty-one cases in which the brain was examined, there was extensive or general inflammatory injection of the arachnoid membrane. In many

[1] Amer. Journ. Med. Sci., April, 1841. [2] Ibid., April, 1846.

instances this injection is described as intense, universal, and fine, extending to the minutest capillaries, and resembling a beautiful anatomical preparation. In some cases it was rather more strongly marked on one side than on the other. In two cases the meshes of the membrane contained coagulated blood; and in two or three there was an effusion of fibrine. In the remaining fourteen cases the membrane is described as moderately or slightly injected; in only three or four was it natural. Another alteration consisted in a dark reddish-brown color of the cortical substance of the brain. This was present and strongly marked in ten of the thirty-one cases, all of which were of the comatose form.[1] In one case, of the algid variety, the cortical substance was paler than natural. In nine cases sections of the brain were immediately covered with numerous bloody points from the orifices of the cut vessels; in a certain number, also, there was more or less venous engorgement of the superficial vessels, and a

[1] This alteration would seem to have been more frequent than is indicated by this proportion of cases in which it occurred. It is probable that Bailly mentioned it in his descriptions, only when it was strongly marked. It may be a matter of interest to my readers to see his remarks upon it. He says: "The brown color of the cortical substance was so generally present in those who perished with comatose fever, and in whom the coma returned with each successive paroxysm, during a great part of the summer, that I came at last so far to habituate myself to this shade as to consider it almost natural. Although I had formerly been especially occupied in France with the anatomy of the brain, and had thus familiarized myself with a type of the natural color of the cortical substance, as must always happen with those who labor constantly upon any similar subject; still, the habit of seeing none but the brains of these comatose patients, had at last substituted a new type for the old one. I therefore seized every occasion that presented itself of comparing these brains with those of individuals who had died with other diseases; and then the enormous difference between the two classes became manifest. For pathological anatomy demands not only extensive observations, but continual comparisons between healthy and diseased organs. Show the brain of a person who has died with comatose congestive fever to a physician but little in the habit of examining brains, and very certainly he will consider himself authorized to deny the alteration, which is quite evident to one who is familiar with the natural appearance of this organ. During the epidemic constitution of the year 1822, at Rome, there were fatal cases of phthisis, aneurism, dropsy, and so on, in which the brain was not implicated. Now, the cortical substance of the brain in these cases, when placed by the side of that of the fever patients, as I have noted in many instances, appeared white. In many instances, the morbid condition of organs is so slight or obscure that its existence may be questionable; but this of which I am now speaking I have found so many times, and so constantly, and it has been so marked and evident, that not one physician in a thousand would have hesitated in admitting it."—*Traité Anat. Path. des Fièvres Inter. Par E. M. Bailly, de Blois*, p. 181.

moderate accumulation of serum; but all these changes are frequently found in other diseases, and, as has already been said, can hardly be regarded as peculiar or important.

The following important additions to the pathology of the nervous centres in periodical fever, mostly of the pernicious form, are derived from the excellent and accurate work of Maillot. He examined the brain and its membranes in twenty-seven cases. In five cases, he found general opacity of the *arachnoid;* in three cases, circumscribed opacity; in one case of icteric algid fever, the arachnoid had a yellowish tinge; and in one case, where a quotidian fever had passed into a typhoid condition, the cavity of the arachnoid contained a sero-purulent collection. In eleven cases the *pia mater* was injected, more or less vividly, the arachnoid remaining natural; in six other cases, both membranes were the seat of a vermilion injection; in most cases, the vessels which run along the surface of the brain were strongly congested; many times the injection of the cerebral envelops was sufficiently fine to form patches, more or less extensive, of a vivid and brilliant red.

In twenty-two cases the cerebrum was more or less strongly injected, in most instances with a firmness and density that appeared to M. Maillot much greater than natural. Generally the substance of the brain exhibited a red color, very thickly dotted with bloody points; in some cases, of comatose and delirious fever, the cerebral mass was so strongly congested that, when compressed after having been divided, the blood flowed copiously from the cut surfaces. In eight cases the gray substance had a very dark color, in five of them approaching a blackish tinge; in six cases the choroid plexus was of a deep red color; in ten cases the ventricles contained bloody serum. In one comatose case the brain was strongly injected, but soft; in one icteric algid case it was slightly injected, of natural consistence, and of a yellow color; in three other cases it was slightly injected, but without change of color or consistence. The cerebellum exhibited changes analogous to those of the brain, but less frequent than these.

In fourteen cases the spinal pia mater was the seat of a vermilion injection; in five cases the pia mater and arachnoid were both injected; in one case of algid fever both had a yellowish color; in one case their condition is not mentioned. In four

cases the substance of the spinal marrow was generally injected and firmer than natural; in one case it was less firm than natural, in one case the injection was very slight; in three cases its consistence was natural without any injection; in two cases the injection was general, but it was much more strongly marked at the cervical and lumbar regions than elsewhere; in one case it had a yellowish tinge, without any other alteration; in four cases there was general injection, with red softening of the dorsal portion; in three cases there was white softening of the dorsal portion; in one case there was white softening of the cervical portion; and finally, in one case, the injection of the gray substance, generally more considerable than that of the white, was very strongly marked in the cervical region, and carried to the red softening in the dorsal. In all these cases death took place in the acute period of the disease. Maillot says, in another place, that these lesions are found in all the varieties of pernicious fever; but that in the algid form he has found the cerebral congestion less strongly marked than in the comatose and delirious, while the spinal changes have been more so than in these.[1] In four cases, reported by Mr. Nepple, the lesions of the brain described by Bailly and Maillot were not observed. In two cases, reported by M. Raymond Faure, they were present.[2]

The fine injection of the membranes, the dark color of the cortical substance, and the general vascularity of the brain, would seem to constitute sufficient evidence of the previous existence at least of a high degree of irritation, approaching and in some instances perhaps passing into actual inflammation. The same remarks may be made in regard to the spinal marrow, and its envelops.

## ARTICLE III.

### LESIONS OF THE ABDOMINAL ORGANS.

SEC. I.—*Liver.* I commence this article with a full account of the condition of the liver, because there is good reason for believing that the lesions of this organ constitute the anatomical characteristic of the disease. For this discovery, and for the

[1] Traité, etc., p. 334. [2] Traité des Fièvres Intermittentes, p. 283, *et seq.*

special attention which has recently been directed to the state of the liver in periodical fever, we are indebted to Dr. Thomas Stewardson, of Savannah, Ga. Dr. Stewardson, before leaving Paris, in 1834, had been made acquainted with the observations of Louis on the state of the liver in all the fatal cases of yellow fever examined during the epidemic in Gibraltar, of 1828; and on his return soon after to America he naturally felt a strong interest in ascertaining whether the same lesion was to be found in remittent fever—a disease regarded by many physicians as a mere variety of yellow fever. Opportunities for determining this interesting and important point of pathology soon presented themselves, and were zealously and faithfully made use of. Cases of periodical fever, in its several forms and degrees, are annually received into the Philadelphia hospitals, coming mostly from certain localities in Pennsylvania, and from the southern ports of the Atlantic, and occurring amongst sailors. During the years 1838, 1839, and 1840, there were seven cases of the disease, which terminated fatally, and in which autopsies were carefully made. The first examination was made on the 9th of September, 1838, seventeen hours after the death of the patient. The form of disease was that most nearly approaching yellow fever. The liver was of natural size, flabby, and of a *bronze color*, becoming livid in the small lobe; internally it was of a uniform light bronze color. The acini were distinguishable by a slight elevation, but there was no difference of color in the two substances. The history of the condition of the liver is thus summed up by Dr. Stewardson: "The liver was enlarged in three cases, and in one of them to a great degree; in the others it was of natural or moderate size. The consistence of the organ appears to have been generally diminished; being flabby or softened, or both, in four cases; a little soft in a fifth; and moderately firm, but still readily penetrated by the finger, in a sixth; in a seventh the consistence is not mentioned. The *color* was nearly the same in every case, but very different from natural. In most of the cases the liver is described as being of the color of *bronze*, or a mixture of *bronze* and *olive;* in one as a *dull lead* color externally; internally *bronzed* with a *reddish* shade; in another as between a *brown* and an *olive*, the latter predominating; and finally as a *pale; slightly greenish lead color*, with a tinge of *brown*, in one instance. The most correct idea of the color before us would, perhaps, be conveyed by stating its

predominant character, the same in every case, to be a mixture of *gray* and *olive*, the natural reddish brown being entirely extinct, or only faintly to be traced. This alteration existed uniformly, or nearly so, throughout the whole extent of the organ, except in a single instance, where a part of the left lobe was of the natural reddish-brown hue. As the alteration of color pervaded both substances, the two were frequently blended together, and the aspect of the cut surface remarkably uniform. In one case, however, there was a marked distinction of color, the olive being predominant in the parenchyma, the brown in the acini. Of the four cases in which these characters are mentioned, the cut surface is described as smooth in three; of a shagreened appearance, and rough in the left lobe, in the fourth. This last character was evidently dependent upon hypertrophy of the lighter colored substance, which existed also in another instance; both cases, however, being examples of a very protracted form of the disease."[1]

In concluding the summary thus given, Dr. Stewardson very naturally suggests, at least the strong probability, that this alteration of the liver may be found to constitute the essential anatomical characteristic of marsh fever, as the lesion of Peyer's glands, and the lymphatic ganglia, constitutes that of typhoid fever. He very properly, however, admits that the number of cases is not sufficiently large to determine this point conclusively; and he refers its definitive settlement to future and more extended observations. In this connection, he states that, in the only case of marsh fever examined during the year 1840, at the Blockley Hospital, by Dr. Gerhard, the liver presented the appearances which have just been described.

The investigations which have been made and published, since the appearance of Dr. Stewardson's paper, are the following. In January, 1844, Dr. Wm. T. Howard communicated to Dr. Stewardson the history of a case which was observed in the Baltimore Almshouse, during the preceding season. "The liver was smooth externally, and of a uniform slaty, bronze color, marked with white striæ through it. When cut into, it presented the same uniform slaty, olive, or bronze color, with the red and yellow substances confounded together, so as not to be distin-

[1] Stewardson on Rem. Fever. Am. Journ. Med. Sci., April, 1841.

guished. It was moist when cut into, its vessels not much gorged with blood, and it was easily penetrated by the finger. No one portion was more changed than another."[1]

Dr. Swett's cases, observed in the New York Hospital, have already been referred to. Five of them were fatal; and in all, the peculiar change in the color of the liver, described by Dr. Stewardson, was present. Externally, this organ had a slaty and bronze tint, and an olive tint internally. Its volume was natural; in four cases it was slightly or moderately softened; in some cases the granular structure was less distinct than in a natural state, while in others it was not altered; in one case each granule was surrounded by a ring of vascular injection. There was no unusual accumulation of blood.[2]

Dr. Alfred Stillé has published, in the *American Journal of the Medical Sciences*, for April, 1846, brief histories of twelve fatal cases of remittent fever, which occurred during the summer and autumn of 1844, in the Baltimore Almshouse Infirmary, and which were reported by Dr. W. F. Anderson, and Dr. Charles Frick. Setting aside two of the cases, on account of some doubtful or qualifying circumstances in their history, the condition of the liver in the other ten is thus summed up by Dr. Stillé. "The size of the liver was noted in nine cases, in all of which, it was unnaturally large. Its consistence was very much diminished in ten cases, in eight of which the right lobe was the principal seat of the alteration; in one the left lobe was chiefly affected, and in the remaining one the whole organ was softened. In *all* the color of the liver was either *bronzed*, or like that of *slate;* the surface of a section was polished or shining; and in every instance but one the different colors of its component parts could not be distinguished."[3] Dr. Stillé remarks, in the number of the *Journal* which contains these histories, that the same condition of the liver has been found in numerous dissections made at the several public institutions of Baltimore, during the fever season of 1845.

The result of Dr. Boling's observations can hardly be regarded, in the present state of our information upon this subject, as of any great value; at any rate, these results are not sufficiently

[1] Am. Journ. Med. Sci., Jan. 1845.
[2] Swett on Path. Rem. Fev. Amer. Journ. Med. Sci., Jan. 1845.
[3] Ibid., April, 1846.

authentic and conclusive to throw any reasonable doubt upon the conclusions of Dr. Stewardson, Dr. Swett, and others. He says that, not having found the changes in the liver which he had looked for, he was led to believe that lesions of this organ were less frequent than of almost any other. On the appearance of Dr. Stewardson's paper his attention was again directed to the liver, but he has been able, he says, in but a very few instances to find any alteration, the organ in a large proportion of cases, so far as he was capable of judging, being entirely healthy. Where it was otherwise, he found the *concave* surface of the liver of a bluish slate color. Dr. Boling does not give any detailed histories of his autopsies; he speaks of himself as not accustomed to frequent *post-mortem* examinations; and, as I have already intimated, it will be considered, in the actual state of our knowledge, as a perfectly fair judgment, that these cases shall, provisionally, at least, be set aside, and not be allowed to have any effect on the settlement of the question before us. Maillot describes the liver in nine cases as *congested;* in three cases as *easily torn;* in one case as *friable;* in three cases as *yellowish, pale,* and *somewhat softened;* once as *greenish yellow;* once as *chocolate colored;* and in five cases as natural. In five other cases its condition is not mentioned.[1]

It would be hardly worth the time and room necessary for this purpose, to go into any detailed account of the pathological researches of older writers upon this family of diseases. The Italian authors—Baglivi, Lancisi, Torti, Ramazzini, etc.—the great classics in this department of medicine—are not at our hand; and if they were, they would be of little service, as they are said to give but meagre and unsatisfactory details in regard to the state of the organs after death. George Cleghorn, in his admirable little treatise on the diseases of Minorca, written more than a hundred years ago, says that he had examined the bodies of near a hundred persons who had perished with tertian fevers, and had constantly found "one or other of the adipose parts in the lower belly—the caul, mesentery, colon, etc.—of a dark black complexion, or totally corrupted." Bailly, in his elaborate and interesting history of the pernicious intermittents of Rome, reports a large number of autopsies; but in many of them the liver

[1] Traité des Fièvres Intermittentes, p. 285.

is not mentioned; in others it is said to have been gorged with blood; and in others it is called natural. It need hardly be said, that the overlooking by these writers, and under such circumstances, of a lesion like that under consideration, is no proof that it did not exist.[1]

There seems to be no uniformity in the character of the bile contained in the gall-bladder. Dr. Stewardson found it generally abundant and very fluid; while in nearly all the cases reported by Dr. Swett, Dr. Anderson, and Dr. Frick, it was dark, thick, and viscid, like molasses. Bailly rarely mentions the appearance of the bile.

As to the nature of the lesion of the liver just described, it is impossible, in the present state of science, to say much, without running into the merest speculation. We have no right to consider it inflammatory. It may be the result of repeated congestions; but it is more philosophical for the present, to say simply, that it seems to be *sui generis*—to consist in an alteration of a special and peculiar character, the nature and mechanism of which are quite unknown to us. It is probably connected in some way with the poison of periodical fever—alike unknown to us—and it may be the result of the action of this poison upon the system, or of the morbid processes to which the poison gives rise.

SEC. II.—*Spleen.* The spleen is almost always enlarged, softened, and of a very dark or bluish black color. This lesion is so constant, and has been so long familiar to all observers of this class of diseases, that it is hardly necessary to multiply cases or to quote authorities. In some instances the volume of the organ is enormously increased. In one of Drs. Anderson and Frick's cases it weighed three pounds, in one of Dr. Swett's cases it was nine inches long and four thick. Bailly mentions instances of its weighing eight or nine pounds. It is often so much softened as to consist merely of a sort of half-fluid putrilage—a dark pulpy mass apparently destitute of organization. Dr. Bailly reports several cases in which these changes in the state of the organ resulted in a rupture of its enveloping membrane, and the

[1] Prost is said to have exhibited the extensive intestinal lesions of typhoid fever in bodies which had been examined by Pinel and Corvisart, and the alterations wholly overlooked.

consequent escape of its softened contents into the peritoneal cavity. Maillot saw but one instance of rupture of the spleen, in Africa. He suggests that its greater frequency in Italy may depend upon the less active means adopted there to prevent local congestions. Dr. Boling thinks that these alterations of the spleen are rather the consequence of what he calls the latent action of malaria than the immediate and direct result of the disease. He says he has never found any evidences of enlargement during life, nor any morbid appearance in the organ after death, in a first attack of remittent fever, in a person who had not previously resided some considerable time in a malarious region. He believes the alterations to take place gradually from the effects of the febrile poison upon the system, and that they are merely increased by the febrile attack itself.[1] This condition of the spleen is probably the result of violent and repeated congestions.

Sec. III.—*Stomach.* The condition of the stomach has not been ascertained with a sufficient degree of accuracy, and in a sufficiently large number of instances, to settle definitely the part which its lesions play in the pathology of remittent fever. Its mucous membrane presents, in a large majority of cases, marks more or less extensive and striking of inflammation. It is generally reddened and vascular; sometimes over certain portions only, and at others throughout the whole extent of its surface. This redness is sometimes continuous and uniform, sometimes in patches; in some cases arborescent, and in others pointed or dotted. The consistence of the membrane is also sometimes diminished; and in many cases it is mamellonated. In five of six cases reported by Dr. Stewardson, marks of inflammation were present;—mamellonation, in three; thickening, in

[1] This opinion of Dr. Boling induces me to record here, in a note, a pathological fact that may have some bearing upon the subject. During the winter of 1844, a patient died in the Baltimore Almshouse with simple pneumonia. He came from the *Mine Banks*, a locality celebrated for the number and severity of its marsh fevers. He had resided there during the sickly season, but was not known to have had the fever. In addition to the lesion of the lungs, his liver presented the alterations already described as belonging to remittent fever. I suggested at the time the possibility, at least, that the change in the liver might have been the result of the gradual and long-continued action upon the system of the febrile poison.

two; thinning throughout, in one; in the great *cul-de-sac*, in another; softening in two, and changes of color in several. In one or two instances the lesions were very slight.[1] The membrane was injected in seven of nine cases reported by Anderson and Frick—in three of them intensely. In five cases it was softened near the cardiac extremity, and in four near the pylorus; where also it was for the most part grayish, thickened, and mamellonated.[2] Dr. Swett found nearly similar alterations; but he is disposed to regard them as less important than they are considered to be by Dr. Stewardson. "Most of the changes," he says, "that I have observed in the mucous membrane of the stomach have appeared to me of a chronic nature, and probably long antecedent to and entirely independent of the acute disease. I refer particularly to the thickened and mamellonated condition of the organ. The injection of the mucous membrane, although present in all the cases to a certain extent, did not appear to me beyond what is commonly noticed in other acute diseases, and might in some cases, at least, be referred distinctly to simple *post-mortem* venous congestion."[3] Of thirty-one cases of malignant intermittent, or congestive fever, occurring at Rome, and reported by Bailly, the stomach is described as presenting marks of inflammation, more or less extensive and intense, in twenty-six; in some cases the mucous membrane was thickened; in some mamellonated, and in many thickly covered with a layer of viscid, tenacious mucus, adhering pretty firmly to the membrane itself.[4] The stomach is not unfrequently contracted upon itself, its inner membrane thrown into prominent folds, and its cavity containing a moderate quantity of fluid of a yellowish, brownish, or greenish color.

Maillot examined the mucous membrane of the stomach carefully in twenty-eight cases, most of them belonging to the pernicious form of the disease. In only one was the membrane entirely healthy. In five cases he found gray, slate-colored softening, without any red injection; in one case gray, slate-colored softening, with pointed redness; in eleven cases gray, dirty softening, with red injection; in one case gray, dirty softening, without redness; in four cases reddish softening; in two

[1] Amer. Journ. Med. Sci., April, 1841.
[2] Ibid., April, 1846.
[3] Ibid., Jan. 1845.
[4] Bailly on Inter. Fevers.

cases reddish-brown softening; in one case blackish softening, without injection; in one case where death was occasioned by rupture of the spleen, very slight recent injection, with a gray tint; and in one case of typhoid affection, the red injection, with softening, common in acute gastro-enteritis. I have already spoken of Dr. Swett's opinion in regard to the character of these gastric lesions. Maillot has arrived at a similar conclusion. He thinks it quite clear that, in most cases, the alterations, especially the softening with gray, brown, and slate coloration, extending to large portions of the membrane, are the result, not of recent acute inflammation, but of chronic irritation, preceding the attack of the febrile disease. The difference between the result of his observation and that of Bailly's he believes to be more apparent than real.

Sec. IV.—*Intestines.* Although our knowledge of the lesions of remittent fever is far enough from being full and complete; and although there are some apparent differences in the results of recent observation in regard to the condition of the mucous membrane of the alimentary canal, we are justified, I think, in saying that there is no satisfactory evidence that this membrane is the seat of any constant, important, or characteristic alteration. Dr. Stewardson has called the attention of the profession to a condition which he supposes may be peculiar to this disease; —I mean, an enlargement of the mucous follicles of the duodenum, or the glands of Brunner, as they are called. He found these glands remarkably distinct in all the six cases, where the duodenum was particularly examined.[1] In all the twelve cases reported by Anderson and Frick, Brunner's glands were also unusually developed, and in three of them to a remarkable degree.[2] Dr. Swett, on the other hand, did not find, in his five cases, any change in the state of these glands which he could look upon as morbid.[3]

The elliptical plates of the small intestines, commonly called Peyer's glands, are, so far as the most authentic and trustworthy observation enables us to determine, *uniformly free from any well-marked morbid alteration.* This, at any rate, is the conclu-

[1] Amer. Journ. Med. Sci., April, 1841.
[2] Ibid., April, 1846.
[3] Ibid., Jan. 1845.

sion which I myself, in the present state of our knowledge, and after a careful examination and estimate of all the evidence within my reach, feel compelled to adopt. But as the question of the condition of these glands is one of so much pathological interest and importance; as it has a direct bearing upon the relations of bilious remittent to other forms of fever, and as it may fairly enough be regarded as not finally and definitively determined, I will state briefly, but completely, the results of recent observation upon this matter. Dr. Gerhard examined particularly and carefully the state of Peyer's glands, in two cases of remittent fever, as long ago as 1834; and he found them in both entirely free from the slightest alteration. In the seven fatal cases which constitute the material and basis of Dr. Stewardson's paper on the lesions of this disease, the glands of Peyer were uniformly healthy. They are described in some cases as distinct, and well defined in their outline, honeycombed on the surface, or dotted with depressed points, and these latter sometimes of a dark color; but uniformly free from thickening, softening, ulceration, or any other obvious and unequivocal alteration.[1] In Dr. Swett's cases, "the glands of Peyer were very distinct from their pale white color, contrasting strongly with the dirty hue of the surrounding mucous membrane, but neither thickened, softened, nor injected."[2] In two of the twelve cases reported by Anderson and Frick, the elliptical plates were either not examined, or are not mentioned; in the remaining ten they were generally pretty distinctly visible, but free from any decided disease.[3]

These results may seem to be in contradiction to certain other observations on the same subject. In the *New York Journal of Medicine and Surgery*, for 1839, Dr. Richardson, resident physician of the New York Hospital, has published the pathological histories of six cases of what was regarded by him as remittent fever; *in all of which*, Peyer's glands are alleged to have been diseased. In three they are said to have been enlarged, but not ulcerated; in one there were numerous small ulcers on one of the plates; and in two there were more or less extensive and unequivocal ulcerations—the ulceration in one of these having

[1] Amer. Journ. Med. Sci., April, 1841.
[2] Ibid., Jan. 1845.
[3] Ibid., April, 1846.

extended through all the coats of the intestine. My attention was called to these cases, by a medical friend, very soon after their publication, on account of the contradiction which they appeared to furnish to one of the most generally received and well established opinions in regard to the intestinal lesions of typhoid and of remittent fever. I studied them with great interest, and with great care; and was immediately and thoroughly convinced that the deductions which had been made from them were wholly gratuitous and unfounded. It was quite clear that, in the two cases, in which extensive and unequivocal ulceration was present, either the diagnosis was manifestly wrong, or there was no sufficient ground for regarding them as cases of remittent fever; while in all the others, in which the diagnosis was most probably correct, there was no sufficient evidence of any morbid condition of the elliptical plates. This whole matter has since been placed in its true light, and the importance of these cases reduced to its proper position, by Dr. Swett, in the *American Journal of the Medical Sciences* for January, 1845. If these cases do not furnish any additional evidence of the wide difference between typhoid and remittent fever, so far as the condition of Peyer's glands is concerned, they do not at least furnish any evidence of a contrary character. They have one value, however; and that consists in the lesson they teach us—a lesson that can hardly be too frequently or too emphatically repeated—of the great danger, in all questions requiring careful observation and rigorous analysis, of trusting in any the slightest degree to incomplete, inadequate, or equivocal facts. Such facts, under such circumstances, so far as the interests of true science are concerned, are worse than none, inasmuch as ignorance is better than positive error; and as it is safer and more profitable to stand still in the dark, than it is to follow a false light in the wrong direction.

Dr. Boling reports two cases in which he found ulceration of the elliptical plates. The history of the cases is not given; but in one of them, we are told that the fever was of about forty days' duration; in the other the case terminated on the ninth day, and was attended by diarrhœa. I have already had occasion to express the opinion that some of the cases alluded to by Dr. Boling, in his description of the symptoms of bilious fever, were cases of typhoid fever; this I believe also to have been true of the two

cases just spoken of. At any rate, the most that we can do with them is, to set them aside, or to place them in the category with those of Dr. Richardson.[1]

As to the mucous membrane generally, both of the small and large intestines, there is no evidence that it is more than occasionally and accidentally altered. Bailly describes it, in most of his cases, as more or less extensively inflamed; and the same thing is true of some other observers. It is quite clear, however, that, in many of Bailly's cases, the presence of a few patches of increased redness or vascularity was the only proof of the previous existence of inflammation. According to the researches of all the more recent and accurate observers, the changes found in the general intestinal mucous membrane, after death from periodical fever, are only those customary and accidental lesions, found with the same frequency after death from many other acute febrile affections. I am not aware that there is anything peculiar in the contents of the alimentary canal. The mesenteric glands are generally without alteration; the same thing is true of the kidneys and the bladder.

Maillot found in fifteen cases, the mucous membrane of the small intestines softened, with a gray, brown, or slate tint, with or without recent injection; in one case softened with bright redness; in twelve cases the elliptical plates with the honeycomb development, in three of which the surface of the plates resembled the newly-shaven chin; in eleven cases, some development of the isolated follicles; once only ulcerations; in four or five other cases slight changes; and in four cases no lesions whatever.[2]

## ARTICLE IV.

### GENERAL REMARKS.

SEC. I.—*Relation of Lesions to Symptoms.* It is sufficiently demonstrated by the foregoing details, that periodical fever does not often destroy life without leaving behind it very decided and somewhat extensive anatomical lesions. As I have done in re-

[1] Since writing the above, I have had a correspondence with Dr. Boling in regard to the most striking of these two cases. His letter to me contains nothing to induce me to change the opinion already expressed in regard to the true character of these cases.

[2] Traité des Fièvres Intermittentes, p. 284.

gard to the fevers already treated of, I propose here to say a few words about the connection between the symptoms of the disease on the one hand, and these lesions on the other. This connection, so far at least as the more constant and important pathological alterations are concerned, would seem to be pretty uniform and direct. We can hardly hesitate, I think, for instance, in referring the nausea, vomiting, and epigastric distress, so nearly always present, to the disorders of the mucous membrane of the stomach, resulting in the changes that are found after death. So, the moderate fulness across the upper part of the abdomen, with the tension, the feeling of weight and oppression, in each hypochondrium, and especially in the left, are evidently connected with and dependent upon the congestion of the liver and spleen, resulting in the alterations which these organs constantly exhibit. In the same way, it is impossible to doubt that the coma and delirium are intimately and directly connected with the striking lesions usually found in the brain and its membranes; and if the relationship here sometimes fails—if it is not absolutely invariable—this is only what happens occasionally, even with the best established and most constant of these relations, in other diseases. M. Maillot thinks that the *algid* symptoms—the failing circulation, and the icy coldness—are especially and immediately connected with the lesions found in the spinal marrow and its membranes.[1]

I do not see any reason to suppose that the lesions of periodical fever follow any fixed or uniform order of succession in their development. The congestions and irritations of the several organs and tissues, which bear the chief burden of the disease, are in many cases evidently simultaneous in their origin—occurring together; in others the weight of the disease, to use the favorite phraseology of the older writers, falls principally upon one organ—the brain, for instance; in still others, upon some other organ—the stomach, the liver, or the spleen;—and all this without anything that is constant or regular.

SEC. II.—*Importance—Relative and Absolute.* The relative and absolute importance of the appreciable lesions in periodical fever—the part which they severally play in the production of

[1] Traité des Fièvres Intermittentes, p. 329.

the aggregate phenomena of the disease, and the share which each of them contributes towards the fatal issue, in fatal cases, are matters which can be only approximatively and in some degree conjecturally determined. We can hardly doubt that a sudden and overwhelming congestion of the cerebro-spinal axis will be attended by greater danger than a corresponding congestion of the liver and spleen; but to attempt to go much beyond a few obvious and manifest conclusions, similar to this, and nicely to gauge and measure the agencies of each pathological alteration, would be but an idle and profitless labor.

# CHAPTER IV.

## CAUSES.

SEC. I.—*Locality.* There is probably no form of endemic disease the geographical boundaries of which are so extensive as those of periodical fever. With certain limited exceptions, it may be said to encircle the earth in a broad belt, parallel with the equator, its northern and southern boundaries quite irregular in their disposition—now approaching to the line of the tropics, and now receding from it. The portions of this immense territory which are entirely exempt from periodical fever increase with the distance from the equator; while within the tropics, and along the range of several degrees beyond them, these portions are confined mostly to certain geological formations, and to elevated situations. The particular regions most extensively and constantly the seat of this disease in its more malignant forms, are low-lying and wet lands, situated in hot climates, and covered with a rank and spontaneous vegetation—the flat, wooded seacoasts; the interior swamps and marshes; and the rich alluvions of the deltas and courses of the great rivers. It is hardly worth while to make a detailed enumeration of all these individual localities. I shall confine myself to a few statements in reference to the distribution of malarious fevers throughout the different portions of the United States, for which I am mostly indebted to the researches of the late Dr. Forry.

These statements are founded upon data furnished by official records in the Medical Department of the United States, and in the Adjutant-General's office. They extend over a period of ten years; and they exhibit the actual and relative prevalence of periodical fever amongst the soldiers in the several military stations of the country. In these several classes of stations, the ratio of cases, annually, of intermittent fever, in each one thousand of mean strength, was as follows: On the coast of New England, 36; on the northern chain of lakes, 193; in posts north

of latitude 39°, and remote from the ocean and inland seas, 151; on the sea-coast, from Delaware Bay to Savannah, 370; in the southwestern stations, including Jefferson Barracks, Forts Gibson, Smith, Coffee, Towson, and Jessup, 747; on the Lower Mississippi, 385; and in the peninsula of East Florida, 520. These averages, derived from sufficiently large numbers, and running through a period of ten years, with one or two explanations and qualifications, may be safely taken as a true exponent of the relative prevalence of this form of fever, in these several regions of country. The apparent ratio in the New England division, low as it is, is still vastly too high; since all or nearly all these cases originated in some of the other divisions. It may be remarked here, incidentally, that Nova Scotia and New Brunswick, in the British dominions, are entirely free from intermittent fever, while in Upper Canada the disease prevails very extensively, although there is no difference in the climate or soil of these regions, to account for the circumstance.

The ratio of remittent fever, according to Dr. Forry, throughout the same regions, is as follows: On the coast of New England, 26; on the northern chain of lakes, 33; in posts north of latitude 39°, and remote from the ocean and inland seas, 24; on the sea-coast from Delaware Bay to Savannah, 181; in the southwestern stations, 180; on the Lower Mississippi, 196; in East Florida, 102. The diagnosis in the present case is less to be relied upon than in that of intermittent fever; it is probable that most of the cases reported in the New England division were *continued* in their type, and not periodical.

The only considerable portion of the vast and various territory now occupied by the United States which is quite exempt from malarious fever, is to be found in its extreme northeastern corner, constituted by the five New England States, and a large part of the State of New York. From nearly the whole of this region periodical fever has almost entirely disappeared. That it was sufficiently common here for a long period after the settlement of the country has been clearly shown, by the very careful and thorough inquiries of Dr. O. W. Holmes, contained in his prize essay upon this subject. There are still a few small localities, mostly along the valley of the Housatonic, in Massachusetts, where a solitary case of domestic origin may be still occasionally met with; but, with these exceptions, the disease is never seen in

any of the New England States. Throughout the remaining portions of the country, the disease prevails with great irregularity of extent and severity. Large portions of some of the States—those particularly which are most thoroughly cultivated, and the higher granitic regions, with the dry, pine country of the South, are to a great extent free from the disease; and this freedom is gradually extending its area with the progress of cultivation.[1]

As a general rule, the simple intermittent form of the disease predominates throughout the cooler and more temperate regions; in the warmer climates, and during the latter part of the hot season, the bilious remittent variety becomes more common, interspersed with occasional cases of the pernicious or congestive variety—the latter becoming more frequent in the more southern regions, and especially along the low, rich river bottoms, and swampy lagunes. Dr. Lewis, of Mobile, says, the low lands in the State of Alabama, lying along the creeks, known as the *slough prairie*, the swamps, and reed marshes, have proved to be more certain and prolific sources of disease than other formations —the low alluvions of the river bottoms not excepted. Some of these localities, as the reed marshes in Green county, though very fertile, have been abandoned. There are said to be farms, near the junction of the Bigby and Alabama rivers, upon which no white man can permanently reside.[2]

There are many other regions where the disease is not less common and malignant. Lind says, Hungary has been properly called the grave of Germany. A very striking instance of the power and intensity of the febrile poison, on the western coast of Africa, will be found in the chapter on bibliography. Dr. Nicolle, in a report made in 1821, says: "About one in twelve, or very nearly nine per cent. of the better class of society, died last year in Sierra Leone; and it appears from official documents in the office of the secretary of government here, that such has been the average annual mortality from the census of Europeans in this colony. On the 31st of December, 1818, there were one hundred and twenty-eight, of whom eighteen sailed before the

[1] At the beginning of the present century, of one hundred men employed at the Onondaga salt works, in New York, ninety-eight were attacked with bilious remittent fever. Many of the cases were fatal.—*Edward Miller's Works*, p. 97.

[2] Lewis's Med. His. of Alabama, p. 16.

rainy season, for England, two of whom died; and of the remaining number—one hundred and ten—eight perished.[1] Mr. Tidlie says: "The exceptions are very few, where Europeans have passed twelve months in the country from England without an attack of the fever. In the year 1819, there were, at Cape Coast Castle, eight new-comers from England, all of whom were seized with the fever, and three died; and out of forty, the total strength of Europeans in the service of the late African company, five died. In 1820 and 1821, there were eleven new-comers, all of whom were attacked, and four of whom died."[2]

Another of the most celebrated malarious regions of the old world is to be found in the middle and southern portions of Italy; and hardly in Africa itself, along the delta of the Niger, is the malarious poison more concentrated and malignant than it is here. Many a traveller has lost his life by a night ride over the Pontine Marshes. Bailly estimates that one-tenth of the population of Rome are annually attacked by disease, and that two-thirds of these suffer from periodical fever. Some of our best and earliest histories of the disease were from Italian pens—those of Torti, Lancisi, Ramazzini, &c. In 1818, there were consumed at the hospital of the Holy Spirit, at Rome, between the months of June and October, inclusive, three thousand and two hundred pounds of cinchona.[3]

SEC. II.—*Season; Temperature; Weather.* There can be no doubt, as I have already said, that, other things being equal, periodical fever increases in frequency and gravity with an increase in the heat of the climate or locality. The simpler and milder form of the pure intermittent type is most common in the more northerly and cooler regions, and in the cooler seasons of the year; while the remittent and congestive forms are mostly confined to the hotter regions and seasons. M. Maillot shows conclusively, by extensive and accurate tables, that the frequency and intensity of visceral irritations and congestions increase in a constant and direct ratio with the elevation of the atmospheric temperature. He says, further, that the dry and hot season, in Africa, is marked by irritations of the brain and of the upper

[1] Boyle's Dis. West. Africa, p. 149.
[2] Ibid., p. 152.
[3] Traité, etc., par Bailly, p. 139.

portion of the alimentary canal, while the wet season brings with it bronchitic and dysenteric complications.[1]

Throughout the United States, the great season for all the forms of periodical fever may be said to extend from the middle of summer to the close of autumn—varying, of course, somewhat, in different years and in different places. Dr. Wilcocks treated, during the season of 1846, in Philadelphia, one hundred and seventy-one cases of remittent and intermittent fever;—in July, ten cases; in August, eleven; in September, ninety-nine; and in October, fifty-one.[2] On the western coast of Africa, the largest number of cases occur near the commencement and the termination of the rainy season—March and September.[3] At Rome, the disease prevails most extensively during the months of August, September, and October.[4]

In regard to the influence of the prevailing character of the season, there is a general impression that hot and wet weather promotes the prevalence of marsh fevers, while cool and dry weather prevents it. This impression is probably in some degree well founded; although the connection between the obvious qualities of the season and disease, are far enough from being fixed and uniform. Some observers, indeed, deny this connection altogether.

Dr. Cooke, of Opelousas, in a paper on congestive fever, says: "We have seen our country enjoying one year extreme good health, notwithstanding the long continuance of the most intense heat, superabundance of rain, and easterly winds; another year, under similar circumstances, it has been ravaged by disease;—other years, when anticipating good health, in consequence of a moderate temperature, a uniform season, and moderate rains, without prevailing east winds, we have also had to sustain the most extensive visitation of disease. No one, in this section of the country, resting on experience or observation, can designate any infallible circumstances as productive or promotive of sickness."[5]

Sec. III.—*Age.* The influence of age upon the occurrence of malarious fever does not seem to have been very particularly

[1] Traité des Fièvres Intermittentes. Par F. C. Maillot, p. 20.
[2] Amer. Journ. Med. Sci., Jan. 1847.
[3] Boyle's Dis. West. Africa.
[4] Bailly, p. 134.
[5] N. O. Med. Journ., vol. ii. p. 180.

studied. It certainly may occur at all ages. It is more common during adult life than it is earlier; and this may in part at least depend upon the greater degree of exposure. Cleghorn says malignant tertians are most common amongst adults, and those of an advanced age.[1] Dr. Charles Parry, in his paper on congestive fever, says: "This disease is confined chiefly to adults of both sexes; children are rarely affected. I never saw a case in an individual under twenty years of age."[2] Dr. Wharton, of Mississippi, says, of congestive fever: "Children under ten years of age are comparatively free from its ravages; and persons from twenty to thirty are most subject to it."[3] Dr. Lewis, of Mobile, on the other hand, thinks that the liability to congestive fever is alike at all ages, and that its greater frequency amongst male adults is entirely owing to the greater and more frequent exposure of this class to the malarious poison.[4]

Sec. IV.—*Sex.* There are more cases of periodical fever, in all its forms, amongst males than amongst females; but the difference in the degree of exposure of the two sexes to the causes of the disease are sufficient to account for this result.

Sec. V.—*Race.* The negroes of malarious regions are less subject to their fevers than the whites.

Dr. Lewis, in his paper on the yellow fever of Mobile, makes the following remarks, in connection with this subject: "I will now travel so far out of my course as to give a few of the facts which have been gathered concerning the liability of the negro race to other diseases indigenous to Alabama. I practised two summers in the interior of the State; during the autumnal months, congestive fever prevailed so generally in my neighborhood as to amount to an epidemic;—there were in my professional circle two blacks to one white, yet I did not see a single case of congestive fever in a negro, nor did I hear that any died of the disease in that section of country. I have made inquiries of several medical gentlemen who have been practising for many years in the country; their experience does not materially differ from mine. The fact is, that the remarkable exemption from yellow fever, which this

[1] Rush's Cleghorn, p. 106.
[2] Amer. Journ. Med. Sci., July, 1843.
[3] Ibid., April, 1844.
[4] Med. Hist. of Ala., p. 26.

race enjoys, extends, in a great measure, to all the malarious fevers of hot climates;—they may all have intermittent and light bilious fevers, as well as the milder grade of yellow fever, but it is only under extraordinary circumstances that these diseases affect them so seriously as to cause death."[1] The same writer, in his *Medical History of Alabama*, speaking of congestive fever, says: "Of twenty-five correspondents, residing in different sections of the State, two-thirds aver that, with the limited exposure to which the whites are subjected, negroes would not have the disease." A very striking instance of the exemption of the negro race from these forms of disease is found in the history of the late disastrous expedition of the British government up the Niger, notice of which will be found in the chapter on bibliography.

SEC. VI.—*Exposure; Excesses, &c.* There is no room whatever to doubt the agency of the ordinary exciting causes of diseases in bringing on an attack of marsh fever. The poison of the disease very frequently lies dormant in the system until it is suddenly kindled into activity by the action of some one of these causes. The most active and important amongst them are—exposure of the body to cold, after it has been heated; exposure to intense heat; fatigue; and all excessive indulgences.

Sir Gilbert Blane says: "If I were required to fix on a circumstance the most pernicious of all others to Europeans, particularly those newly arrived in the West Indies, I would say that it is exercise in the sun. The practice most hurtful next to this is intemperance in drinking, and to one or both of these the sickness and mortality amongst new-comers may be ascribed."[2]

It is important, however, to add, that where the poison of the disease is very active and concentrated, it overbears all resisting influences, and does not require the co-operation of any of these occasional causes. Hillary, in his account of the diseases of Minorca, says: "Surprising as it may appear, it is nevertheless true, that the peasants, who are remarkable for temperance and regularity; and the soldiers, who, without meat and clothes, frequently lie abroad drunk, exposed to all weathers, have diseases almost similar, both as to their violence and duration. Hence it

[1] N. O. Med. Journ., vol. i. p. 416. [2] Obs. Dis. of Seamen, p. 226.

is evident how far the power of the air is superior to that of the other non-naturals in producing disorders of the animal economy."[1]

SEC. VII.—*Malaria.* The essential, efficient, producing cause of periodical fever—the poison, whose action upon the system gives rise to the disease—is a substance, or agent, which has received the names of *malaria* and *marsh miasm.* The nature and composition of this poison are wholly unknown to us. Like most other analogous agents—like the contagious principles of smallpox and typhus, and like the epidemic poisons of scarlatina and cholera—they are too subtile to be recognized by any of our senses; they are too fugitive to be caught by any of our contrivances. Neither the strongest lenses of the microscope, nor the nicest analyses of chemistry have succeeded in discovering the faintest traces even of the composition and character of these invisible, mysterious, and stupendous agencies. As always happens in such cases, and under similar circumstances, in the absence of positive knowledge we have been abundantly supplied with conjecture and speculation;—what observation has failed to discover, hypothesis has endeavored and professed to supply. It is quite unnecessary even to enumerate the different substances to which malaria has been referred. Amongst them, are all the chemical products and compounds possible in wet and marshy localities; moisture alone; the products of animal and vegetable decomposition; and invisible, living organisms.

In regard to the alleged agency of animal and vegetable decomposition in the production of the poison of periodical fever, I have but little to say, and this for the simple but sufficient reason that we have no positive knowledge upon the subject. Unquestionably there is a very active decomposition, both of vegetable and of animal substances, usually going on in malarious localities; it is possible enough that this decomposition may produce the poison; but there is no positive evidence yet that it does so; and there are some reasons for doubting it altogether. One of these reasons is to be found in the common and notorious fact that this same decomposition is constantly going on without giving rise to periodical fever.[2] The hypothesis of the animal-

[1] Rush's Hillary, p. 42.

[2] Bailly says that, in 1822, Rome was visited by immense numbers of large grasshoppers, so that the streets and fields were covered with them, living and

cular or cryptogamic origin of this and of some other endemic and epidemic diseases is an old one, which has been recently revived, and advocated with great ingenuity and ability. It is only a hypothesis; but it may be safely said of it, I think, that it may be made to correspond to the ascertained phenomena in connection with the etiology of these diseases, better than most other hypotheses; and that it is less embarrassed by objections which cannot be met, and by difficulties which cannot be overcome.

Inscrutable, however, as the intimate nature of this substance or agent may be, there are some few of its laws and relations which are very well ascertained. One of these consists in its connection with low and wet, or marshy, localities. This connection is not invariable and exclusive—that is, there are marshy localities which are not malarious; and there are malarious localities which are not marshy—but there is no doubt, whatever, that it generally exists. The terms *marsh* miasm, and *marsh* fever have originated from this circumstance.

Again, it is quite certain that the malarious poison may be transported by the atmosphere to a considerable distance from the place of its origin. M. Rigaud de l'Isle says: "About the end of 1810, I was at Civita Vecchia, in Italy. Passing through St. John's Place, which is a pretty regular square, I was shown one whole side where the inhabitants had been much afflicted with diseases occasioned by bad air, while those on the opposite side had almost escaped. What could be the cause of such an extraordinary difference between houses so near to one another? Dr. Nucy, an intelligent physician, pointed out to us that the former faced the south, so as to receive directly the south-east winds, which arrive saturated with miasmata from the marshes on the coast."[1] A similar circumstance was observed in Philadelphia, in 1846. Dr. Wilcocks noticed that the occupants of houses exposed freely to the southerly winds, suffered much more generally than those living on the same street, but more or less sheltered from these winds.[2]

dead; but that the fevers of the country were much less extensively prevalent than during the previous year. He says also that the Ghetto in Rome—the Jews' quarter—is excessively filthy; the narrow streets covered with decaying animal and vegetable matters; but that it suffers much less from endemic fever than the more open, cleanly, and aristocratic neighborhood of the Vatican.—*Traité des Fièvres, etc. Par E. M. Bailly*, p. 125.

[1] Johnson on Trop. Climates, pp. 11 and 123.

[2] Am. Journ. Med. Sci., Jan., 1847.

Sir Gilbert Blane, in speaking of bilious remittent fever, says: "I have known a hundred yards in a road make a difference in the health of a ship at anchor, by her being under the lee of marshes in one situation, and not in another. It is difficult to ascertain how far the influence of vapors from woods and marshes extends; but there is reason to think that it is to a very small distance. When the ships watered at Rock Fort, they found that if they anchored close to the shore, so as to smell the land air, the health of the men was affected; but upon removing two cables' length, no inconvenience was perceived."[1]

The effect of a wall of dense foliage in arresting the progress and preventing the diffusion of malaria has often been noticed. A striking instance is given by Dr. Wooten, of Alabama. I quote from Dr. Lewis's *Medical History of Alabama*. "Mr. P. E. had negro quarters situated on the first prairie elevation above the low grounds of a small creek, the fourth of a mile from the houses. This belt of low ground frequently overflowed, causing water to remain in holes over its entire breadth, on the subsidence of the stream; but it was well shaded by a dense foliage, the plantation lying on the prairie in the rear of the cabins. In the winters of 1842 and 1843, the trees between the houses and creek were cleared away; and up to that time, some eight or ten years, the negroes living in this quarter had enjoyed uninterrupted health, a case of fever scarcely ever occurring. During the summer of 1843, the first after the forest had been cleared away, fever prevailed amongst the negroes with great violence, continuing until frost. The negro quarters were afterwards removed to the opposite side of the creek, about the same distance from it, but with an intervening growth of timber, and no fever has occurred on the place since."[2]

The latent period of the poison is quite indefinite; it is sometimes short, and sometimes long. Disease may follow its reception into the system in the course of a day or two, or not until after the lapse of several months. Illustrations of this law are often furnished on a large scale by armies. John Hunter gives an instance which occurred in Jamaica. A fine healthy regiment, stationed in a malarious locality, suffered severely from fever;

[1] Dis. of Seamen, p. 221.

[2] Med. His., etc., p. 17.

they were removed to a healthy region, and first attacks continued to occur for *four months* after the removal. Dr. Bancroft says many officers and soldiers, after their return from the expedition to Zealand, had primary attacks of intermittents, from six to nine months after their arrival in England.[1] Macculloch doubts the entire authenticity and conclusiveness of these reported instances of the action of malaria, at so long a period of time after exposure.[2]

The duration of the exposure to the poison, necessary for the production of the disease, is very short.

The susceptibility of the system to the influence of malaria is lessened by long-continued exposure, but it is not destroyed. Malaria itself is destroyed, and its further evolution arrested by a temperature as low as the freezing point.

[1] Bancroft's Essay, p. 241.
[2] Macculloch on Marsh Fever, p. 24.

# CHAPTER V.

## VARIETIES AND FORMS.

### ARTICLE I.

#### BILIOUS REMITTENT FORM.

I HAVE already spoken of the subdivision of periodical fever into its three principal forms; and it is in this chapter that I find a suitable place for stating the grounds of this subdivision, and for indicating the principal features of these three leading varieties. Bilious remittent fever has now been pretty fully described; and it is sufficient to say, here, that the principal point of dissemblance between it and the pure intermittent form, consists in the continuance, in the former, of a considerable degree of febrile excitement, or of morbid action, during the intervals between the paroxysms or exacerbations of the disease. The several elements of a paroxysm—the chill, the febrile reaction, and the perspiration—are also more distinctly marked in the intermittent than they are in the remittent variety; and they are repeated from day to day, or from period to period, with greater regularity and uniformity. The remittent form is generally more inclined to run a determinate course, and then to cease, or to pass into the intermittent form than the latter. The fundamental pathological difference between the two varieties consists, probably, in the existence in remittent fever of more fixed and permanent local irritations than are to be found in intermittent fever. Bilious remittent fever itself can hardly be said to exhibit any very uniform or well-marked varieties. Still, it is important to state that the fever of one season and one locality frequently differs pretty widely from the fever of another season or another locality; and similar differences may exist between the disease during one portion or another of the same season. In this respect, periodical fever only partakes of the mutability to which almost all diseases

—and especially such as are at all endemic or epidemic in their character—are subject. During certain seasons, and throughout certain regions, it is not only more or less violent and dangerous than it is at other times and in other places, but it assumes certain peculiarities, more or less striking; at one time there is a predominance of one set of symptoms—at another, of another set. Cleghorn says: "In July, when these fevers first break out, their type is commonly simple and regular; their paroxysms are of short duration; and after three, four, or five periods, they vanish of their own accord. As the season advances, the tertians become more dangerous and difficult, often terminating in malignant forms, especially if much rain without wind fall during the dog-days. About the time of the equinox they assume a surprising variety of forms, and very often counterfeit continual fevers, having long redoubled paroxysms. But as the winter draws near, their type becomes more simple, and though they prove tedious and obstinate in cold weather, yet they are more regular and less dangerous than in the summer."[1] Dr. Stewardson says: "In some seasons, the remissions are very well marked, and the disease very manageable; whilst in others it is more prolonged, the remissions more obscure, and the symptoms of the *typhoid state* more developed."[2]

## ARTICLE II.

### CONGESTIVE FEVER.

SEC. I.—*Names.* There has been a good deal of confusion from the somewhat indefinite signification which has been attached to the term *congestive fever*, and from the loose manner in which it has been applied. The qualifying prefix, *congestive*—is generic in its character; like the term *typhoid*, it is expressive of a pathological state or condition which may exist in different diseases. In this way most writers speak of congestive varieties or cases of cholera, of scarlatina, of yellow fever, and so on. They mean simply those forms of these diseases in which this pathological element, thus designated, predominates. The essential nature of the pathological condition itself is obscure. It is probably com-

[1] Rush's Cleghorn, p. 107. [2] Amer. Journ. Med. Sci., April, 1842.

plex; and it may be more or less modified by its connection with individual diseases. In its simplest form, we generally understand by it an undue accumulation of blood in the vessels—usually the larger ones, and especially the veins—and the tissues of an organ or part. But in its connection with the grave forms of disease, of which I have just spoken, there seems to enter into its composition some unknown but profound modification of the great function of innervation. This function is the seat of a sudden and violent perversion; and at the same moment, there is a like sudden and violent rush of the blood towards some one or more of the organs; or a draining off of the serum, as happens in epidemic cholera. This *congestive state* generally occurs during the early period of the diseases with which it is associated.

The term *congestive fever* is now generally made use of, in the Western and Southern States, to designate the *pernicious* or *malignant* form of *malarious* fever. I can see no objection whatever to this use and application of the term; it is only important that its meaning should be determinately settled, and its application generally agreed upon. I would never attempt to introduce a new name for a common disease, so long as an old and familiar one could be found, not positively and seriously objectionable.

Sec. II.—*Type, and mode of attack.* Congestive fever may belong either to the intermittent or to the remittent variety; but to the former more frequently than to the latter. It may also assume any of the types of periodical fever; but the quotidian and tertian are the most common.

Sometimes the disease is fully developed, and clearly marked at the outset—the congestive seal is set upon it during its first paroxysm. At other times, and this seems to be more common, the first paroxysm does not differ very essentially from an ordinary attack of simple intermittent. Dr. Charles Parry, who has written a short and fragmentary, but most excellent paper upon the disease as it occurs in Indiana, says: "In the majority of cases, the symptoms of the first paroxysm are such as occur in an ordinary intermittent attack. One main peculiarity is an expression of intense apprehension, or terror, without experiencing it. Perhaps the face is paler, or more livid, than in common

...nance; its expression is dead. It is only when vomit-
...choleric discharges are added to this algid condition, that
...become sunken and glassy, and are surrounded by a blue
...and it is only when the respiration is carried on through
...mouth that the tongue becomes dry and dark colored.
...ch of this variety is very insidious; there is no one per-
...hose vigilance has not been deceived by it. If one is not
...with this state of things, the kind of calm which follows
...le excitement may easily be mistaken for a great ame-
..., attributable perhaps to sanguineous depletions, and the
...is revealed only by the sudden and unlooked for death
...ient."[1]

...notices particularly the tranquil expression of the counte-
...these cases. "I have already mentioned," he says,
...algid fevers, the patients pass from life to death with-
...ing able to foresee this event; we can hardly believe
...sick even, either during the intermissions or the par-
...pecially in the early period of the latter." In the re-
...which follow the report of his thirty-seventh case, he
...this instance, especially, the color of the face was
...expression was that of repose, of tranquillity; only
...were a little tightened upon the bones of the face,
...those of a phthisical patient, or of a person dying
...gastritis; it was rather the look of a man in full
...rests after excessive fatigue. Indeed, if this man
...pointed out to me as one attacked with algid fever,
...have paused to notice him, near as he was to the
...his existence; and when the paroxysm came on,
..., without becoming any more alarming in its ex-
...ached that of a person just sinking into sleep.
...more striking than the contrast between this
...d the pain which he alleged to exist in the abdo-
... as if the torpor in which he was plunged had
... sympathies which usually exist between our
... the suffering abdomen had no power to act
...omy with which it was no longer in rela-

...eaction, mo... ...ided, there suddenly

[1] ... 235.

succeeds feebleness of the pulse, with paleness of the tongue, and colorless lips, there should be no hesitation in regard to the case —it is one of algid fever. Temporising here is death. When the termination is to be favorable, the pulse becomes more distinct; the skin resumes its natural heat; and there follows sometimes, though rarely, an irritation of the brain, or digestive organs, requiring sanguineous depletion. The coldness dissipated, the patient enters at once into full convalescence, as he does after a comatose or delirious paroxysm. I have never seen the phenomena constituting algid fever proceeding by distinct paroxysms; they have hardly presented any appreciable remissions; once established, they march steadily towards death, unless they are arrested."[1] The pulse, Dr. Charles Parry says, even from the beginning of the second paroxysm, is rapid, small, and thready; sometimes hard and wiry, and sometimes irregular and intermitting. The skin is of a livid hue, and of a marble coldness; and it is covered from head to foot with a cold, clammy, sticky sweat; in some instances, this perspiration is confined to the face and neck. The hands are shrivelled like a washerwoman's, and the patient begs for cold drinks, and to be fanned.[2]

According to Maillot, the three preceding varieties constitute the immense majority of cases of pernicious intermittents.

Sec. VI.—*Gastro-enteric Variety.* This form of congestive fever seems to be pretty common in our Western and Southern States.

Dr. Charles Parry, in his description of it, says: "The vomiting and purging are almost incessant; the discharges are often mixed with blood, but not with bile. They have the appearance of water, in which a large portion of recently-killed beef has been washed. Sometimes, however, the proportion of blood is much greater, at times amounting almost to clear blood; and from three to five or even twelve ounces at a discharge, with intervals of from ten to forty minutes. The discharges have but little odor, and there is but little abdominal pain or tenderness; though the patient complains of a sense of weight and burning heat in the stomach. * * The thirst is most intense. The constant cry

[1] Traité des Fièvres Intermittentes. Par F. G. Maillot, pp. 28–36.
[2] Amer. Journ. Med. Sci., July, 1843.

is for cold drinks, cold ice water; and a very common exclamation is: 'O, that I could lie in the river!'—'If I could only have a stream of cold water running through me!'"[1]

I add the following, from Dr. Parry's general description. "The respiration," he says, "is often very peculiar. It consists of a deep-drawn double inspiration, or double sigh, with one expiration. This double breathing is seen in perhaps more than two-thirds of the cases; it is a fatal symptom. It is seen very early in the second paroxysm, generally at the beginning, and continues to its close, either in the agony of death, or to the febrile reaction.

"Restlessness is very great, the patient constantly tossing about from one side of the bed to the other, throwing about his arms and legs; frequently endeavoring to get out of bed, and walking across the room, if permitted, only an hour or two before death. I have seen persons get out of bed, walk across the room, and stand in the doorway, hours after it was impossible to detect any pulse at the wrist, though the carotids could be felt plainly. Such is the intense desire of patients to get cold air, that they frequently express themselves determined to have it, at all hazards; and, indeed, it frequently happens, even when nearly all the symptoms just enumerated are present, that the patient does not think there is much the matter with him, and wonders why he is kept in bed, and not suffered to go out.

"The usual length of the fatal paroxysm is from three to six hours, though it is longer in some cases;—the moribund symptoms increasing, the pulse becoming more and more frequent, feeble, irregular, thready, and fluttering; the respiration prolonged and sighing; the skin cold and shrivelled, and covered with large drops of clammy perspiration."[1]

It is proper to mention that the preceding varieties may be more or less mixed up with each other, sometimes one of them preponderating, and sometimes another. It is hardly necessary to take any separate notice of the minor varieties—the cardiac, the icteric, the syncopalic, and so on.

[1] Amer. Journ. Med. Sci., July, 1843. [1] Ibid.

## ARTICLE III.

### INTERMITTENT FEVER.

The principal points of difference between the simple intermittent and the bilious remittent forms of periodical fever, have already been indicated. It only remains for me here to give a short general description of the former variety of the disease.

The paroxysm of a regular and simple intermittent commences with the rigor, or chill. This is usually severe and strongly marked. The patient has an intense feeling of coldness; his teeth chatter, and his whole body shivers with cold. The skin is pale and shrivelled, with a dark bluish or purplish tinge on the tip of the nose, the lips, and the extremities, and it is cold to the touch; the features are pinched and shrunken; the expression of the face is languid, listless, and uneasy; there are frequent gaping and yawning; a general feeling of weariness and fatigue, pains in the head, back, and limbs; sighing respiration, oppression of the præcordia; a small and frequent pulse; and the mind is feeble and depressed. Such are the ordinary and more obvious phenomena constituting the cold fit. The urine is generally abundant and limpid.

After a period of time, varying from fifteen or twenty minutes to three or four hours, the average length being an hour or so, the first stage passes gradually into the second. The sensation of coldness yields to a feeling of morbid heat; the skin is full and injected, and is hot to the touch; the face loses its languid expression, and becomes animated and flushed; the præcordial oppression is sometimes removed or diminished, but not always; there are less languor and depression; the local pains, instead of diminishing, are increased in severity; the pulse becomes full and strong; there is increased thirst; and the urine is now scanty and high colored.

This second or hot stage continues from one to fifteen or eighteen hours, and then gives way to the third, or sweating stage, which completes the paroxysm. As the surface becomes moist, the febrile perturbation subsides;—the pulse is slower and softer; the expression of the face tranquil; the local pains and the other uneasy sensations disappear; the urine deposits a reddish sedi-

ment, and there is a general and delightful feeling of relief and of restoration to health.

The period between the termination of this and the commencement of the next paroxysm constitutes the intermission. In many cases, where the disease is quite simple, and where there are probably no considerable local irritations or congestions, this apyrexial period seems to be one of entire freedom from disease. The strength, the appetite, and the cheerfulness of the patient are restored; all his functions, animal and organic, seem to have resumed their healthy activity. In other instances, however, there are still remaining, throughout the entire period of intermission, evidences more or less obvious and serious, of a disordered state of the system.

The entire duration of the paroxysm, as well as that of its several stages, varies very greatly in different cases. It ranges from a few hours to eighteen or twenty.

# CHAPTER VI.

## DURATION AND MARCH.

SEC. I.—*Duration.* The average duration of the common form of remittent fever seems to be about two weeks, perhaps a very little longer. Of eleven cases treated in the Pennsylvania Hospital, by Dr. Gerhard, the mean duration was fourteen days and a half; of fifty-four cases treated in the same institution, and reported by Dr. Stewardson, the mean duration was about fifteen days.

The duration of the other varieties is so various and indefinite, and so much influenced by circumstances, that it is not easy to establish any positive averages. Congestive fever terminates speedily, in most cases, either in recovery or death. Dr. Charles Parry says: "The general duration of this disease is from six to nine days, in recovering so as to walk about; in fatal cases, from two to three days, death usually occurring in the second or third paroxysm, hardly ever in the first."[1]

The duration of the simple intermittent form is altogether indefinite. It may consist of only one or two paroxysms; or it may be continued, with more or less regularity, for several weeks, and even for several months.

SEC. II.—*March.* The *types* of periodical fever have been already sufficiently treated of in the chapter on the symptoms of the disease. The march of the fever differs considerably in the different forms of the disease. The progress of *remittent fever* is generally pretty regular—the disease gradually increasing in severity until it reaches its height or acme, and then passing into convalescence. Cleghorn seems to have studied this subject with great care, and he makes the following observations in regard to it: "As the fever advances to its height, the coldness and

[1] Amer. Journ. Med. Sci., July, 1843.

shivering which usher in the paroxysms become less, or entirely imperceptible; in which case a cholera morbus, or acute pains in the back or limbs, supply their place. In the mean time, the paroxysms themselves become longer, and bring on more formidable symptoms, such as headaches, raving, sopors, apoplectic fits, bleeding at the nose, cough, difficulty of breathing, palpitation of the heart, irregularity of the pulse, sickness and anxiety, pain about the upper orifice of the stomach, and so on. Besides, it often happens, during the second, third, fourth, or fifth period, that the tertian becomes double, though at first it was simple; or if it was double from the beginning, the weaker fit continues without any intermission, till the stronger comes on, and both being blended together, the disease puts on the appearance of a semi-tertian having one very long fit, with a short interval every forty-eight hours. It must likewise be observed that, in the progress of the fever, the regular order of the periods is frequently disturbed by the paroxysms changing their hour of invasion, and attacking unawares, without any previous cold. After this manner, these proteiform distempers continue to vary their shape in every period, and to produce longer, more severe, or more frequent paroxysms till they arrive at their height; about which time the fits and intervals are often so confused that they are scarcely to be distinguished; nevertheless, if death be not speedily the consequence of this confusion, they commonly again put on a more simple or regular form, and, after one or more slight paroxysms, go away of their own accord. Those fevers which come to their height in the third period, terminate in the fourth or fifth period; those which come to their height in the fourth period, terminate in the fifth or sixth; and those which come to their height in the fifth period, terminate in the sixth or seventh. When the most vehement paroxysms happen on the odd days, the crises will be on the odd days: when they happen on the even days, the great changes of the distemper will likewise be on the even days. If the fever increases to the seventh period, it probably will not cease before the ninth; but it rarely happens that remitting tertians run out to so great a length. Yet I have seen every year a few of the continual kind, which began with great mildness, and, increasing by slow degrees, broke out violently in the third or fourth week, and soon after ended in intermittents; though some of them

have continued without any considerable intervals for six or seven weeks. But it is much more common to meet with tertians, which set out furiously, with severe subintrant double paroxysms; so that for some days they have little or no interval. On the third or fifth day a profuse sweat commonly brings on an intermission; and afterwards the disease assumes the type of a double intermitting tertian, or of a semi-tertian. Such fevers I have frequently observed to terminate spontaneously on the seventh, ninth, and eleventh days; and, for the most part, they are less to be feared than those which begin deceitfully in the shape of a slight double or simple tertian. For, however mild and insignificant these intermittents may at first seem to be, we are never to trust appearances till they have performed three or four revolutions."[1]

The progress of the *malignant* form of the disease is more irregular and uncertain.

Senac thus speaks of the sudden and great changes so striking in this last variety: "It may be thought singular in these diseases that sometimes, from so slight a beginning, the danger should become so urgent and threatening in the course of a few days. But it is a problem no less difficult to solve, how a cause which so disorders the brain, and so oppresses the lungs can, of its own accord, give the system a temporary respite, or cease for a time to act. Thus, after the third or fourth day, the action of this cause is suspended, and for a day or more the patients seem free from disease. Other maladies do not pursue such a course; in them the affected parts recover only by degrees; and after they have recovered, or appear to have recovered in the space of a day or two, the life of the patient is seldom brought into danger again by a sudden return of the disease; at least this is not generally the case, as it is in malignant intermittents. * * * Hence it appears that these terrible symptoms may arise from some wandering stimulus, which flies off and returns, or acts and lies dormant, alternately; and that they are sometimes more alarming in appearance than dangerous in reality."[2] Bailly says: "This sudden transition from a state of imminent danger to apparent safety is especially characteristic of comatose intermittents. In the other varieties of pernicious fever, there is not so striking a difference between the different stages of a paroxysm. * * * A

[1] Rush's Cleghorn, p. 95, *et seq.* [2] Caldwell's Senac, p. 118.

finger compresses the brain—the patient sleeps; if the pressure is light, everything returns promptly to its natural condition; if the pressure is strong, it kills on the spot."[1]

SEC. III.—*Critical Days.* It is the proper place here to say a word or two about the existence of what have been called *critical days*—days upon which, more than upon others, the disease has a tendency to terminate either in recovery or death. There is no doubt, whatever, that the old doctrine upon this subject is the true one, and the disputes which have arisen about it have originated in the circumstance that physicians have endeavored to apply it to the family of continued fevers, a class of diseases in regard to which it utterly fails. It follows almost necessarily that a disease, marked as periodical fever frequently is, by a regular tertian revolution, should be liable to particular changes, either for better or for worse, on particular days; and this is the wholè substance of the doctrine of critical days.

SEC. IV.—*Relapses.* Periodical fever, more than any other form of acute disease, is liable to return, and to repeat itself, again and again, in the same subject. When the malarious poison has been once received into the system, the action of slight occasional causes will often continue, for a long time, to bring back the disease.

Dr. Charles Parry says of congestive fever: "Once having had an attack does not exclude the possibility of having another the same season, although a second attack is rare. I had one patient who had two attacks one season; and I had one patient who had an attack in three successive summers."[2]

SEC. V.—*Sequelæ.* Periodical fever, especially if it has been often repeated, or long continued, very frequently leaves behind it serious and profound alterations of some of the organs, or more or less grave disturbances of their functions. The principal of these I shall here enumerate. The first to be mentioned consist of various chronic alterations of the liver and spleen, especially the latter. These organs become enlarged, indurated, or both; and their intimate structure, in many instances, vari-

[1] Traité, etc., p. 171.

[2] Am. Journ. of Med. Sci., July, 1843.

ously changed. From the time of Hippocrates to the present day, the frequency of these chronic organic alterations has attracted the notice of all observers. When they become inveterate and extensive, from long exposure to the malarious poison, and from repeated attacks of fever, they generally entail upon the patient gradually increasing debility, dropsical accumulations, a broken-down constitution, and finally death. In many instances, however, it is surprising to what an extent, and for how long a period, the system will bear up against these inroads. "I have often seen these subjects," says Bailly, "arriving at the hospital in Rome, with the abdomen hard as a stone, the spleen occupying the whole anterior part of the cavity. A few intermittent paroxysms constituting the only disease which brought them to the hospital, they were treated like the other patients; the paroxysms were arrested by quinine, and at the end of two or three weeks, they departed to resume their occupations, cured of the fever, but with the abdomen as hard as ever." Maillot says that he has often noticed, amongst the shepherds of Corsica, stout and robust men, engaged in rough out-door occupations, with the abdomen enormously distended in consequence of these alterations.[1]

The notion has been extensively prevalent, that these visceral obstructions are the result, not of the disease itself, but of the bark and its preparations, which are given for its cure. It is hardly necessary for me to say that there is no foundation whatever for this opinion.

The dropsical effusions, and especially the ascites, which so frequently accompany the latter stages of these cases, are, for the most part, the result of the changes in the state of the liver and spleen, and of the watery condition of the blood.

In hot climates and seasons, long-continued cases of periodical fever are pretty frequently followed by chronic dysentery and diarrhœa. Maillot says that these consecutive affections are almost constantly without fever; there is little or no pain in the bowels; the discharges are serous, mucous, or sanguinolent, and generally abundant and frequent, but sometimes scanty. There is rapid emaciation; the skin is of an earthy hue, dry and fur-

[1] Traité des Fièvres Intermittentes, p. 246.

furaceous. Of thirty cases, occurring in the French military hospital in Algiers, fourteen terminated fatally.[1]

Dr. Finley, in a paper on the autumnal fever of Georgia, says: "A severe attack of the disease always leaves the system very much deranged. All the secretions are impaired; the skin is dry and harsh; the biliary secretion alternately vitiated and defective; the bowels constipated."[2]

Another pretty common consequence of this disease consists in different disturbances and perversions of the nervous system. Amongst these are—neuralgic pains; headache; muscular weakness; partial and incomplete paralysis, usually of the lower limbs; and impaired activity, or derangement, of the mind. Senac says, in speaking of the headache: "Patients sometimes declare that the head feels as if it were cleft asunder in the middle." Dr. Mosely says: "Imbecility of mind, as well as of body, is a common consequence of long and obstinate disorders in hot climates; and I have frequently observed that the mind has been greatly impaired after irregular and harassing intermittents; and sometimes a temporary insanity has ensued. This must have been also observed by others; but as far as I know, no person except Sydenham, who was the first that noticed it, has mentioned it as occurring in practice. He says he has often found, when the patients had been extremely debilitated by long continuance of the disease, the doubling of the fits, and repeated evacuations, that they have been seized with a madness, when they began to recover, which went off proportionally as they gathered strength; but that, sometimes, from injudicious evacuations only, it has degenerated into a miserable kind of folly for life."[3] Maillot mentions amongst the effects of the disease noticed amongst the French soldiers in Africa, extreme debility during convalescence, especially in the hot season; and trembling of the muscles, like slight chorea, or like the paralysis of the insane. He thinks that neither the type of the fever, nor the intensity of the local irritations, has much influence in the production of these effects.[4] Macculloch enumerates a great variety of

[1] Traité des Fièvres Intermittentes, p. 244.
[2] West. Med. and Phys. Journ., vol. iii. p. 179.
[3] Mosely on Trop. Dis., p. 189.
[4] Maillot on Inter., p. 250.

nervous disturbances and perversions, the result of repeated attacks of marsh fever.

Another common consequence of long-continued periodical fever, or of the chronic lesions to which it gives rise, is an anemic condition of the system. The blood loses its healthy proportion of globules; the gums, lips, and tongue lose their fresh color; and the skin is sallow and pale.

– One form of marked intermittent is convulsion – this is seen in children exposed to miasma – Dr. W. has seen several cases – the convulsions come on at regular intervals – Treatment Quinine. W.F.P.

# CHAPTER VII.

## MORTALITY AND PROGNOSIS.

THE danger attending periodical fever depends very much upon the form which the disease assumes. The purely *intermittent* and benign variety is never fatal, without some accidental complication. It often entails upon its subjects chronic visceral alterations, which impair the vigor of the system, and which often shorten life, but it is never directly and immediately fatal. The ordinary *remittent* form is more grave in its character, but still, in a very large proportion of instances, it terminates favorably. Of sixty-three cases of periodical fever admitted to the Pennsylvania Hospital, in 1838, 1839, and 1840, six terminated fatally; but three of these belonged to the congestive form, and were received only a short time before death; and in one other case the disease had been greatly aggravated by improper treatment.[1] Dr. Wilcocks treated one hundred and seventy-one cases of remittent and intermittent fever, in Philadelphia, in 1846, and they all recovered. He does not state the proportion of cases of the two forms.

At the hospital of Montluel, of thirteen hundred and fifty-two cases, treated between June, 1822, and December, 1826, one hundred and thirteen terminated fatally. At the military hospital of Bona, in Africa, in twenty-two thousand three hundred and thirty admissions between April, 1832, and March, 1835, there were two thousand five hundred and thirteen deaths, nearly one in nine.[2]

Other things being equal, and as a general rule, the gravity and fatality of periodical fever increase as we approach the tropics. "Thus," say MM. Fournier and Begin, "if we examine the endemic diseases of the principal malarious countries, we shall see

[1] Am. Journ. of Med. Sci., April, 1842.

[2] Traité, etc. Par F. C. Maillot, p. 276.

in Holland, intermittent fevers attacking great numbers of subjects, but generally following a slow march, and giving the physician sufficient time to combat them. In Hungary, these fevers are more frequently remittent, and complicated with dysentery. The fevers of Italy, in the neighborhood of the Pontine Marshes, have short intermissions, and are frequently complicated with ataxic phenomena."[1]

In regard to congestive fever, Maillot makes the following interesting observations and statements. "I do not know," he says, "how the opinion has established itself that *pernicious intermittents* are readily curable, and that art is almost certain to triumph over them. But, ever since Lautter said that in these diseases the physician is the arbiter of life and death, writers have spoken very lightly of the prognosis of these terrible affections; they have proclaimed their treatment as the triumph of medicine. Certainly, it is a beautiful thing to snatch from an imminent death, to rescue almost from the tomb, a man stricken with a pernicious paroxysm; the danger was so urgent that one has hardly indulged a hope of his patient's recovery, when he is already cured; but, deceived by the *éclat* of similar successes, we have been carried away by our enthusiasm, and have refused to believe in the possibility of reverses, for it has been almost alleged that we had reached mathematical certainty in the treatment of these diseases. But to this enthusiasm, in which we ourselves for a long time participated—to these sanguine anticipations which we should still rejoice to indulge, let us oppose the rigorous impartiality of positive statistical results. In eight hundred and eighty-six cases of pernicious fever, observed in 1818 and 1819, at the hospitals of the Holy Spirit, and Saint John in Lateran, at Rome, there were five hundred and forty-five recoveries and three hundred and forty-one deaths—one death in two and a quarter. In five hundred and eighty-one cases of periodical fever, observed by M. Nepple, fourteen belonged to the pernicious form; six of these terminated fatally. Antonini and Monard, in thirty-nine comatose or apoplectic cases, had nine deaths; in eighty-six encephalitic cases, they had only eight deaths—unquestionably the most favorable result on record, if they include in this category only cases of the delirious variety.

[1] Dict. des Sci. Med., art. Marais.

The following is the result of my own experience. I have notes of one hundred and eighty-six cases, belonging to the comatose, delirious, and algid varieties, occurring between the first of June, 1834, and the first of March, 1835, thirty-eight of which, about one-fifth, terminated fatally. Seventy-seven comatose cases furnished fourteen deaths, one in five and a half; sixty-one delirious cases furnished twelve deaths, one in five; and forty-eight algid cases furnished twelve deaths, one in four. The mortality varied with the type in the following manner. Sixty cases of the quotidian type furnished fifteen deaths, one in four; thirty of these were of the comatose form, and gave six deaths, one in five; twenty-one were of the delirious form, and gave five deaths, one in four; and nine were of the algid form, and gave two deaths, one in four and a half. Twenty-seven cases of the tertian type furnished six deaths, one in six, nearly; nine of these were of the comatose form, and gave two deaths, one in four and a half; fourteen were of the delirious form, and gave three deaths, one in five, nearly; four were of the algid form, and gave one death, one in four. Ninety-nine cases of the remittent and pseudo-continued type, furnished nineteen deaths, one in five, nearly; thirty-eight of these were of the comatose form, and gave six deaths, one in six, nearly; twenty-six were of the delirious form, and gave four deaths, one in six, nearly; thirty-five were of the algid form, and gave nine deaths, one in four.

"Such is the mean rate of mortality that has attended pernicious fevers at Bona. In localities where the malarious poison is less powerful, it is probable that more favorable results may be looked for; but otherwise, I have reason to believe, from the researches which I have made, that proportions much more encouraging than those just indicated have never been obtained, unless it may have been accidentally.

"If now we endeavor to ascertain the modes in which death takes place in periodical fever, we shall find that in the acute forms, the patient is either carried off suddenly, during a paroxysm, or that the paroxysms are prolonged and run into each other, the visceral congestions becoming fixed and being followed by inflammation, and complicated frequently with a typhoid condition. When death does not happen in either of the foregoing modes; when relapses have followed each other in rapid succession; especially when the disease has been neglected, and the

irritations feebly combated, there then supervene chronic affections of the digestive tube, engorgements of the abdominal viscera, intractable diarrhœas, dropsical effusions, etc.

"Amongst three thousand seven hundred and sixty-five patients received into the military hospitals of Bona, in the space of fourteen months, there were one hundred and thirty-five deaths, occurring in the following modes. Fifteen hundred and eighty-two cases of the quotidian type furnished forty deaths, one in forty, nearly; of these patients, eight died in a delirious paroxysm; eight, in a comatose paroxysm; three, in an algid paroxysm; one, with jaundice; five, in a typhoid condition; thirteen, with chronic diarrhœa or dysentery; one, with acute dysentery; and one, anemic. Seven hundred and thirty cases of the tertian type furnished twelve deaths, one in sixty-one, nearly; of these patients, three died in a delirious paroxysm; two, in a comatose paroxysm; one, in an algid paroxysm; three, with chronic diarrhœa or dysentery; and one each with chronic bronchitis, chronic pneumonia, and marasmus. The quartan type furnished no death. One double tertian had a fatal issue, after six weeks' duration. Seventy-nine cases of the remittent type furnished two deaths, one in a delirious and one in a comatose paroxysm. Thirteen hundred and thirty-two cases of a continued or pseudo-continued type furnished eighty deaths, one in sixteen and a half, nearly; of these patients, five died in a delirious paroxysm; seven, in a comatose paroxysm; ten, in an algid paroxysm; thirty-one, with chronic diarrhœa or dysentery; three, with acute dysentery; three, with typhoid affections; three, with chronic pneumonia; six, with acute follicular colitis; two, with chronic bronchitis: two, with chronic affections of the heart; and one each, with acute gastro-colitis, encephalitis, encephalic irritation followed by paralysis, apoplexy, acute bronchitis, acute carditis, and marasmus.

"To sum up these details, death took place during the paroxysm, in fifty-one cases; in a typhoid condition, in eight cases; from diseases such as occur in non-malarious regions, in fifteen cases; from chronic affections, in sixty-one cases, forty-seven of which were chronic diarrhœas or dysenteries."[1]

In another place, Maillot says: "The prognosis in pernicious fever is always very grave. The principal varieties—the delirious, the comatose, and the algid—give nearly the same mortality.

[1] Traité des Fièvres Intermittentes. Par F. G. Maillot, p. 277, *et seq.*

When, notwithstanding large sanguineous depletions, the coma continues profound, and the pulse remains strong and full, although the patient may be bathed in sweat, we have reason to fear a fatal issue. Death may be equally apprehended, if the persistence of the coma is accompanied by a rapid, feeble, small and vibrating pulse. There are comatose cases where the trismus is so strong that the patient is unable to swallow; or where, on the other hand, the rectum will not retain any injection: the prognosis is here very unfavorable; there are no means of administering the sulphate of quinine but by the skin. The delirious variety isolates itself less frequently than the comatose in the nervous system; it is more frequently associated with symptoms of acute abdominal inflammation; if with this there is vomiting, so that the febrifuges are rejected, the danger is very great. When the delirium persists, and the pulse at the same time becomes small and feeble, and the skin is covered with a cold, clammy sweat, death is imminent. In the algid variety, the prognosis varies with the intensity of the morbid phenomena. If the pulse entirely disappears, the danger is extreme. This suspension of the circulation, if it is continued for some time, is certainly followed by death. If the pulse can be still felt, although only at considerable intervals, whatever may be the degree of coldness, we may indulge hope. When algid fever is accompanied by choleric vomiting and purging; when the face and extremities are blue, the breath cold, and the voice broken and sepulchral, death is almost inevitable. Vomiting without effort, as if by regurgitation, in the course of algid fever, with a moist, white, cold, and flat tongue is always of fatal augury; it has appeared to me to be connected with extensive and chronic softening of the mucous membrane of the stomach."[1] Maillot thinks that in most cases of fatal pernicious fever, *there existed some chronic lesion before the access of the disease.* Dr. Charles Parry, in his paper on the congestive fever of central Indiana, says: "Without treatment, or with the usual treatment of bilious fever, which is little better than none in this disease, probably three-fourths of the cases terminate fatally. But with a special treatment, not more than one in eight."[2]

[1] Traité des Fièvres Intermittentes. Par F. G. Maillot, p. 343.
[2] Am. Journ. Med. Sci., July, 1843.

"In the mean time," says Cleghorn, "it is to be remembered that as in all acute diseases, so particularly in these fraudulent, deceitful fevers, the presages either of death or recovery are not always certain and infallible; it frequently happening that those who have laid in the paroxysm for hours together, with few or no signs of life, have at length recovered as it were from the jaws of death, and asked for some uncommon sort of food, to the great surprise of everybody about them; on the other hand, the fit anticipating sometimes brings on death before the time it was indicated."[1]

"Can we determine in advance," says Maillot, "whether a simple intermittent will or will not become pernicious in its character? I think not. Frequently, we cannot do this even at the commencement of a pernicious paroxysm. Without doubt we have reason to apprehend the approach of this perilous form of the disease, whenever any of the visceral irritations are intense —whenever the symptoms of gastro-enteritis, or encephalitis, are strongly marked; but this rule has many exceptions, and I have often seen the most pernicious paroxysm succeed, without any premonition, to those of the simplest character."[2]

The prognosis is thus summed up by Cleghorn. "If the paroxysms are not attended with acute pains in the viscera, and do not last above twelve hours; if they decline with plentiful warm sweats, and leave the intervals tolerably free; if the patient bears the distemper well, and begins to have an appetite for victuals; if small pustules break out in the inside of the mouth, or scabs about the lips; if the urine has recovered its natural complexion, or is cloudy and turbid, or lets fall a white or a pale red sediment;—I say if all these signs concur about the third or fourth period, we may safely prognosticate a speedy recovery. On the other hand it announces danger when, about this time of the disease, the paroxysms are long and protracted; or are accompanied with an obstinate delirium, an intense coma, great anxiety, and pain in the loins, or about the upper orifice of the stomach; when the patient has an utter aversion to food, and even in the intervals is so feeble, and attended with such a swimming in the head, that he can scarcely walk about; when the hypochondria and epigastric region are swelled, hard, and painful to

[1] Rush's Cleghorn, p. 103. [2] Traité des Fièvres Intermittentes, p. 338.

the touch; when numerous blotches, like the stinging of nettles, frequently break out on the skin; when the urine continues thin, clear, high colored, or covered with an ash-colored membrane, like a cobweb; and lastly it announces danger, when larger evacuations come on than the strength can well bear, such as vomiting, purging, bleeding of the nose, colliquative sweats, or the like. For fevers with these appearances sometimes are immediately changed into mortal dysenteries; sometimes they become continual tertians, and run out to a great length; but, for the most part, they preserve the form of remitting or intermitting fevers, and daily growing stronger, prove very dangerous about the sixth or seventh period.

"Those fevers are most to be dreaded, whose violence is greatest on the even days; and if the paroxysm stops on the third, fifth, or seventh day, but continues on the fourth, sixth, or eighth day, we must be upon our guard, lest a sudden storm should succeed this treacherous intermission.[1] * * Nor is there only a possibility, in many cases, of foretelling the day, but likewise the hour, on which the patient will expire; for that stage of the paroxysm which he usually got over with the most difficulty will most probably in the end prove fatal. I have seen some expire in what may be called the first stage of the paroxysm; the skin being chilled, and wet with cold sweats, their pulse small and irregular, and their senses entire to the very last. But the greatest numbers are hurried off in the height of the hot fit, stupefied, senseless, the breathing short and laborious, and the skin covered with a burning fiery sweat."[2]

Maillot observes, that in the delirious variety of pernicious intermittents, there is frequently a strong apprehension of approaching death, and that this feeling is always a fatal augury.[3]

Dr. Charles Parry observes, that the plethoric, young, and robust, are most apt to die; and that the age, in a majority of fatal cases, is from twenty-five to thirty-five.

The return of the paroxysm, in all the forms of periodical fever, at an earlier and earlier period of the day, is a favorable indication; its appearance at a later and later period is unfavorable.

[1] Rush's Cleghorn, p. 98.
[2] Ibid., p. 103.
[3] Traité des Fièvres Intermittentes, p. 58.

# CHAPTER VIII.

## DIAGNOSIS.

THE diagnosis of well-marked and uncomplicated cases of nearly all diseases is a matter, in the actual state of medical science, not often attended with any considerable difficulty. This is true of periodical fever. Under such circumstances, its several forms can be distinguished from each other, and from all other diseases, with great facility and certainty. The mark which is set upon these diseases by their family seal of periodicity separates them broadly and widely from nearly all other affections. It sometimes happens, however, that this seal becomes so blurred and indistinct, or is so nearly obliterated, as to lose much of its value as a diagnostic and distinctive indication, and we are obliged to resort to other and collateral sources for the true character of the disease. This happens most frequently under the following circumstances. In the warmer malarious regions, and during the prevalence of the graver forms of periodical fever, the bilious remittent variety, especially, frequently loses to a great extent its *periodical* or *remittent* character, and assumes more or less entirely a *continued* form. This modification usually takes place during the latter period of prolonged cases, and under these circumstances the resemblance between the disease and continued fever becomes very close; and this resemblance is frequently increased by the presence of typhoid phenomena—great debility, feeble pulse, dry and brown tongue, tympanitic abdomen, diarrhœa, and so on. It would be foolish to deny the difficulty, under such circumstances, of always distinguishing between this modification of remittent fever, and continued fever of the typhoid character. The resemblance here is so striking, that the opinion has extensively prevailed in this country, and still continues to prevail, that *bilious remittent fever is not unfrequently changed in its progress into continued typhoid fever.* The mistake here is that very common one of confounding the *typhoid state* or

*condition* present in many diseases, with specific *typhoid fever*. But, notwithstanding this resemblance, and the difficulty which I have admitted, a careful study of the previous history of these cases, and of all the circumstances attending them, will generally enable us to come to a pretty positive conclusion, and to establish a pretty certain diagnosis. We shall almost always find that during the first week or two of the disease, its remittent character was so decided as to remove all uncertainty as to its true nature. We shall find, further, in most cases, certain differences between the actual condition of the patient and the phenomena of typhoid fever. The rose-colored eruption will be wanting; the low, muttering, and *continuous* delirium, with twitching of the tendons, and picking at imaginary objects, so common in grave cases of continued fever, will at least very rarely be as prominent and striking; and the periodical tendency, masked and crippled as it is by the complication of local congestions and inflammations, will still, if closely watched for, frequently manifest its presence, by various slight and irregular but sudden changes, such as are not often met with in continued fever.

Dr. Stewardson says, that when the disease is prolonged, the remissions obscure, and the *typhoid state* present, the distinction between bilious remittent and typhoid fever may be rendered somewhat difficult; but that generally errors of diagnosis might be avoided by greater attention, and a more intimate acquaintance with the essential characters of the two diseases.[1]

During the paroxysm of the unmixed comatose or delirious form of congestive fever, the condition of the patient may be almost the same as in some local diseases of the brain. The history and the collateral circumstances of the case will generally be sufficient to remove all doubts as to its true nature.

"If, as it frequently happens in the hospitals," says Maillot, "we had no previous knowledge of a patient, whom we find with coma or delirium, we might suppose the case to be one of acute meningitis, and resort at once to bloodletting, which, indeed, would be proper in either case. But the influence of the treatment upon the march of the symptoms would soon dissipate all doubt as to the nature of the affection. If it is a pernicious intermittent, and death does not take place during the paroxysm,

[1] Am. Journ. Med. Sci., April, 1842.

the coma or the delirium will disappear in a few hours, the skin will cover itself with an abundant sweat, the pulse will become apyrectic, and there will remain little or nothing of the condition, which, a few minutes before, so seriously endangered life. If, especially, all this happens in a malarious region, or during the prevalence of intermittent fevers, it is impossible to mistake a pernicious paroxysm for any other disease. For it is not in this manner that acute continued affections proceed. Look at a meningitis. As it is by degrees that it arrives at its highest point of intensity; as it is only after having continued for several days that the headache gives place to delirium or coma, so also it is only by degrees that the symptoms subside. Never, as in a pernicious paroxysm, does the delirium of acute meningitis yield in the course of a few minutes; never is the coma dissipated with a rapidity that partakes of the marvellous. The abrupt cessation of very dangerous symptoms;—the calm which succeeds to them; their almost instantaneous reappearance;—such are the phenomena proper to periodical fever, and which we may in vain seek to find in continued affections."[1]

I have said nothing about the distinctions between the several forms or varieties of periodical fever itself. After the full description that has been given of these varieties, it is hardly necessary to do this. I will merely observe that all these forms and varieties may run into each other; they are mutually convertible; and not fundamentally and specifically distinct forms of disease.

[1] Traité des Fièvres Intermittentes, p. 339.

# CHAPTER IX.

## THEORY.

AN adequate and complete theory, even of the very simplest form of disease, is beyond the reach of our science; and the difficulties in the way of establishing such a theory increase with the increasing complexity and obscurity of the diseases to which we wish to apply it. Still, as I have already intimated, I have no disposition to abjure entirely all attempts to explain and interpret the phenomena of disease; I do not wish, because we cannot render our theories perfect, to reject them altogether. Science here, as everywhere else, is in the appreciable phenomena with which we deal, and in their ascertainable relations; but there is no objection to our endeavoring to interpret these phenomena, and these relations, provided only that we do so with a clear comprehension of the nature and scope of the task we have undertaken. Bearing in mind that these interpretations are, in their very nature, more or less hypothetical and conjectural; that they are entirely subordinate to the facts with which they are concerned; that they may be false as well as true; that they are never to be treated like the facts and their relations which they attempt to explain, as essential and constituent elements of science; and that our absolute loyalty to the latter is never to be impaired by any claims or pretensions of the former;—bearing these things always in mind, we may not only engage with safety in these explanations—provided that we do so with becoming modesty and caution—but they may even help us somewhat in systematizing and arranging our knowledge.

It can hardly be regarded as hypothetical to say that there is a double element in the pathology of periodical fever. This double element consists of a *perversion of the function of innervation*, and of *local congestions in certain organs and tissues*. Maillot, and some others, refer the former of these elements to irritation of the cerebro-spinal axis. They think that this view

is justified by the phenomena during life, and by the alterations found in the brain and spinal marrow, and in their membranes, after death. Maillot looks upon this affection of the cerebro-spinal axis, not as a pure ordinary *inflammation*, but as a *nervous irritation*—an *active neurosis*—with a sudden *raptus* of blood to the organs. However this may be, it is quite certain that one of the essential elements in the pathology of periodical fever consists in *some* modification of the nervous system; and it is nearer the truth, probably, in the present state of our knowledge, to say that this modification is peculiar in its character and obscure in its nature, instead of attempting to refer it to any of the ordinary and common morbid conditions of this system.

It is possible that this lesion of innervation may constitute alone the pathology of periodical fever; the disease, in its purest and simplest form, may be without any other pathological condition; the local congestions in the liver, spleen, stomach, and so on, may be altogether wanting. This, however, it seems to me, is not the most probable and rational conclusion to be derived from the phenomena of the disease. There is no doubt of the general tendency to these local congestions; there is no doubt of their existence in all grave and severe cases; they are always found on examination after death. Under these circumstances, although in mild and simple cases of pure intermittent fever, there may be no positive evidence of the existence of these congestions, and although I admit the possibility that they may not be present, still, as I have already said, taking into consideration all the circumstances, it seems to me more philosophical and more rational to conclude that they constitute an invariable and essential element in the pathology of this disease, than it is to regard them as accidental complications.

The relations of the lesion of innervation, and of the local congestions, to each other, and the relative and absolute importance of all these—the parts which they respectively play in the integral disease which they constitute—must be more or less matters of opinion merely. The nervous disturbance constitutes, probably, the first visible and tangible link in the chain of morbid actions; it is, probably, the point of departure in the series of morbid processes making up the disease; it seems reasonable to suppose that it takes precedence of the local congestions, and that the latter are under the control of the former. All this,

however, let it be admitted, may be otherwise; or, it may be that both elements—the nervous lesion and the local congestions—instead of being dependent one upon the other, are alike occasioned by the action on the system of the malarious poison—their common and independent cause.

In regard to the relative and absolute importance of the several morbid elements, I cannot say anything that is not altogether conjectural. The danger to life would seem to depend, generally, upon the intensity of the visceral congestions and irritations; but our knowledge of the nature of the nervous disturbance, and of the part which it plays, is so incomplete and so qualified, that it is neither very philosophical nor very safe to indulge to any great extent in these and similar speculations. It is safe, perhaps, to say that the element of *periodicity* is probably connected directly with the lesion of innervation, and not with the local congestions.[1]

Some of my readers, especially the younger ones, may be not a little disappointed that I do not engage in the attempt so often undertaken, to lift the veil which hides from us the efficient causes, the mechanism, and the essential nature of this mysterious and complex phenomenon of *periodicity*. For their gratification, and I trust for their benefit, I shall make two or three remarks upon this subject, which, unlike the subject itself, will at least be sufficiently intelligible. First, then, *all* the interpretations and explanations which have been given of this phenomenon, are entirely and absolutely hypothetical; they are the coinage of the brain—the fruits of the imagination and the fancy. Not only so, but, in most cases, they are as obviously and glaringly absurd, preposterous, and false, as they are hypothetical. They have not even the merit of possibility, to say nothing of probability, plausibility, or ingenuity. Nowhere, perhaps, in the boundless

[1] Hippocrates attributed tertians and quotidians to a superabundance of bile in the first passages, and quotidians to atrabile. Galen referred quotidians to an alteration of the pituita; tertians to that of the bile; and quartans to putrescence of the atrabile. The anatomists said that quartans were the result of an obstruction occasioned by the minutest atoms; tertians by those a little larger; and quotidians by the largest. Rayer refers periodical fever to a cerebro-spinal neurosis; Guérin de Mamers does the same. Brachet, of Lyons, says it consists in a modification of the ganglionic system. Bouillaud calls it an active neurosis. M. Roche refers it to a contamination of the blood by the malarious poison.—*Maillot*, p. 316, *et seq.*

region of medical speculation, has the rage for hypothesis been wilder and crazier than here. Secondly, the essential nature of this phenomenon is probably *inscrútable.* We may analyze it; we may resolve it into its elements; we may ascertain the relations of these elements to each other, and to their modifiers —we may do all this, and still be as far as ever from its ultimate cause, its essential condition, its intimate and absolute nature. *Who understands, or can comprehend even, the nature of sleep? And what reason is there to believe or to hope, that the thick darkness which has ever wrapped and which still wraps this intermittent physiological phenomenon, so full of mystery and wonder, will ever be dispelled?*[1]

[1] Darwin attributed the phenomenon of intermittence to the nutritive movement of composition and decomposition, and the periodical recurrence of waking and sleep. Reil taught that it was connected with the analogous phenomena of the physical universe. Willis referred it to the periodical development of a fermentable matter in the blood; De La Boë to the introduction into the blood of an acid, pancreatic juice; Borelli to an irritation of the nerves of the brain, and of the fibres of the heart, occasioned by an acidity or an acrimony developed in the nervous fluid. Werlhof referred it to the periodical movement of the earth, while Mead and others attributed it to lunar influence, to the alternate action of day and night, the direction of the winds, &c. Giannini said intermittence was occasioned by the excessive diminution of sensibility during the sweating stage. Guérin de Mamers attributed it to an extraordinary development of nervous influence, its concentration upon a given point, its subsequent exhaustion, its renewal, and so on. M. Roche finds a sufficient explanation of this phenomenon in the intermittent character of its causes, and in certain other collateral influences.—*Traité des Fièvres Intermittentes*, p. 270. Bailly, notwithstanding his general good sense, labors through many idle pages to show that morbid intermittence is occasioned by the diurnal change in the position of the human body, from the upright to the recumbent, and *vice versâ*. Maillot concludes this enumeration with the following quotation from Monfalcon: "*To know that we know nothing is a great deal; we are then much nearer the truth than when we mistake, for this latter, erroneous hypothesis.*"

# CHAPTER X.

## TREATMENT.

To combat the visceral lesions; to oppose the return of the paroxysms; to prevent the occurrence of relapses;—such is the triple base upon which rests the treatment of periodical fever.—MAILLOT.

## ARTICLE I.

### BILIOUS REMITTENT FEVER.

SEC. I.—*Preliminary.* The treatment of the common form of bilious remittent fever is pretty well settled; and although the varieties in the character of the disease, in different seasons and localities, render necessary certain modifications in the treatment, the essential principles of this remain the same.

SEC. II.—*Bloodletting.* General bleeding is not commonly resorted to in the treatment of this disease. There can be no doubt however, that in robust and plethoric habits, and where there exists no contraindication, either in the circumstances of the individual case, or in the prevailing character and constitution of the disease, early and moderate general bleeding is of much utility. Early in the disease, under these circumstances, where the headache is violent, the skin dry and hot, and the pulse full and bounding, the symptoms will be moderated by this remedy; but in the absence of these or analogous special indications, it would seem to be safer to abstain from general bleeding. Lind cautions against bleeding in hot climates. He says great harm has been done by English practitioners, who followed the example of Sydenham. Sir Gilbert Blane recommends bleeding in athletic habits, with high excitement, violent pains, or delirium: but he adds these words: "Although the cases requiring bloodletting are more frequent in this sort of fever than in typhus, yet great caution and nice discernment are necessary with regard to it, in

all cases, in a hot climate. Bloodletting, unseasonably and injudiciously employed, either endangers life, or has a very remarkable effect in protracting recovery, by the insurmountable weakness it induces."[1]

Topical bleeding, by cups or leeches, is of very great service, and of very general application. There are, probably, but few cases in which it may not be beneficially applied. This means is especially valuable for the removal or diminution of the epigastric pain, tenderness, and distress. In ordinary practice, cups will usually be made use of; and they should be applied across the epigastrium and the hypochondria, and repeated according to the urgency of the symptoms and the strength of the patient until their object is accomplished. The best time for their application is during the febrile exacerbation, when the skin is warm and dry; and the earlier in the disease the better. "As regards the stage of the disorder," Dr. Stewardson says, "I should say that it was not worthy of much consideration in determining upon the propriety of local depletion in cases of an ordinary remittent, where considerable epigastric or hypochondriac tenderness coincided with more or less acceleration of pulse, and heat of skin. For although here, as in the more severe disease of hot climates, early depletion, *i. e.*, from the first to the fourth day is highly desirable, in order to shorten its course and diminish the force of the local determinations, yet the same danger does not exist as in the latter, in reference to depletion at a much later period; unless, of course, where the symptoms of prostration clearly forbid it. I would not hesitate, then, to abstract a few ounces of blood under the circumstances mentioned, even at a late period of the disorder, since it is certainly a point of paramount importance, in the treatment of remittent, to prevent, as far as practicable, the production of those chronic alterations of the spleen and liver, which, when once firmly rooted, so generally prove fatal after lengthened suffering."[2]

Strong determination of blood to the head, indicated by headache, heat, throbbing, and in some instances delirium, requires the application of scarified cups to the temples and back of the neck.

[1] Diseases of Seamen, p. 389. [2] Am. Journ. Med. Sci., April, 1842.

SEC. III.—*Purgatives.*—The use of purgatives in the treatment of bilious remittent fever is almost universal. In the United States, they are nearly always given at the commencement of the disease, and repeated occasionally, during its subsequent course. Different combinations of cathartic substances are adopted by different practitioners; but nearly all of them make use of some mercurial preparations—either calomel, or blue pill. One of these substances is preferred on account of the peculiar action which they are believed to exert upon the liver; and for their efficacy in restoring and correcting arrested or depraved secretions. Whatever may be the precise mode of action of the mercury, experience seems to have demonstrated its usefulness as a purgative in this form of disease. From five to ten grains of calomel may be combined with ten or fifteen grains of jalap, or with fifteen or twenty grains of rhubarb, to constitute a single purgative dose; this may be repeated, if necessary, or it may be followed by an ounce of castor oil. Instead of the calomel, ten or fifteen grains of blue pill may be made use of.

Excessive purgation should be avoided. This evil, owing to the disastrous influences of a false and preposterous pathological theory, has been pretty extensively prevalent throughout many portions of our Southern and Western States. Happily for science and humanity, like the bastard philosophy whose legitimate offspring it was, it has nearly run its race, and had its day, and is fast disappearing from the practice of our art. It is quite enough, as a general rule, that two or three consistent stools should be procured during each twenty-four hours, for the active period of the disease, and one or two, later. If there is intestinal irritation, still greater caution is necessary; and the milder laxatives should always be preferred.

SEC. IV.—*Cinchona.* The periodical element in the pathology of this disease is to be met and neutralized by the great antiperiodic remedy—cinchona and its preparations. There is no substitute for these. They are universally relied upon for this purpose. In all countries, and at all periods, since the discovery of the properties of this incomparable and invaluable substance, amidst all the conflicting dogmas of different medical doctrines, Peruvian bark has never failed to sustain its reputation, and to answer the expectations that have rested upon it. Amidst the

manifold uncertainties of medical science, and the perpetual contingencies of medical art; amidst the disheartening scientific infidelity which has lately been taking possession of the medical mind, shaking to its deep foundations the firm old faith in the potency of drugs, and threatening to overturn and demolish it altogether—it is gratifying and consolatory to feel and to know, that here at least we stand upon solid ground, that here we may hold—that there is at least one great and important therapeutical relationship definitively and positively ascertained and established, defying alike the open assaults of quackery from without, and the treacherous machinations of indolent skepticism from within.

The sulphate of quinine is altogether the best of the preparations of the bark, and it is now almost universally and exclusively used. There is a good deal of difference in the mode and circumstances of its administration, by different practitioners—a difference that is probably rendered necessary by modifications in the character of the disease itself. As a general rule, in the treatment of the common form of bilious remittent fever, practitioners desire to diminish the intensity of the local congestions and irritations, by depletion and purgatives; to lessen the general febrile excitement, and thus to develop the periodical element in the disease, by rendering the remissions more distinct, before resorting to the use of the quinine. Two or three grains an hour are then usually given during the period of remission. Some physicians prefer very much larger doses—fifteen or twenty grains, for instance—given at once, and repeated, if necessary. Other observers attach less importance to the *preparation of the system*, by bloodletting, cathartics, &c., for the quinine, and resort immediately, and without much regard to the stage of the disease, to its use. There seems to be good ground for believing, as I have just intimated, that these differences may have arisen from differences in the character of the disease. It appears probable, for instance, that, in the more northern and temperate latitudes, it is more necessary to prepare the way for the use of quinine, by the preliminary remedies before mentioned, than it is in the more southern and warmer latitudes. In these latitudes, the disease may sometimes assume a graver character than it wears in the former, verging towards its congestive co-gener, and requiring somewhat the same treatment that is necessary in the latter.

SEC. V.—*Diaphoretics; Refrigerants, &c.* Remedies of this class are generally made use of, especially during the height of the febrile paroxysm. Small doses of ipecac., nitrate of potash, and spirit of mindererus, are amongst the articles most frequently selected—the choice depending upon the circumstances of the case, or the opinions of the practitioner. Cold drinks, acidulated or not, effervescing draughts, and so on, according to the taste of the patient, should be freely administered.

## ARTICLE II.

### CONGESTIVE FEVER.

Although the general indications in the management of the congestive variety of periodical fever may be nearly the same as in that of the bilious remittent form, very important modifications are necessary in the details of the treatment and in the application of remedies. In no other disease, of so grave a character, does so much depend upon the prompt, efficient, and judicious interference of art; under no other circumstances, of ordinary acute disease, is the life of the patient placed so absolutely in the hands of his physician. A blow struck at the right time, in the right place, and in the right direction, will very often save the life that would otherwise have been lost. And the action of the physician in the treatment of this terrible form of disease is crowded into the briefest space of time; the issues of life and death hang upon a single hour; the morbid processes must be *immediately* arrested, or modified, or they will inflict irreparable and fatal injury upon the organs in which they are situated.

In laying down rules for the treatment of congestive fever, I shall rely mostly upon the observation and experience of the physicians of our Southern and Western States. They have long been extensively familiar with the disease in all its phases, and in its gravest form; they have studied carefully and attentively its therapeutical relationships; they have been, for the most part, sufficiently free from the influence of preconceived opinions and doctrinal theories, to look steadily at Nature and to follow its teachings, and I regard their authority upon this subject as high at least as any in the world. There are, as might naturally enough be expected, some differences amongst them; but, so far

as the most important and fundamental principles of treatment are concerned, they are very well agreed.

I shall first speak of the means that are usually resorted to during the cold fit—a condition which appertains to all the varieties of the disease—in what is commonly called the *congestive chill*—in order to bring about *reaction*. External heat and stimulants, and internal stimuli, are generally relied upon for this purpose. Hot bricks, or bottles of hot water, are applied to the legs; and the surface of the body is extensively covered with sinapisms. Small quantities of brandy, or wine whey, porter, or some similar article, are frequently repeated internally. *At the same time, the sheet-anchor is to be at once thrown out*—the great remedy is to be immediately and boldly resorted to. The sulphate of quinine, usually in combination with some other articles, according to the circumstances and condition of the patient, is to be freely given. From ten to twenty grains of the sulphate should be administered, either alone or in combination with half a grain, or a grain, of one of the salts of morphia, with a few grains of calomel, or blue pill, according to the indications.

Dr. Charles Parry, during the chill, applies hot bricks to the feet, and sinapisms over the belly and legs. Every half hour, he gives a pill composed of one-fifth of a grain of sulphate of morphia, one grain of camphor, two grains of blue pill, and sometimes half a grain of capsicum. If there is much blood in the discharges from the bowels, and these are frequent, he gives every half hour one-fifth of a grain of sulphate of morphia, three grains of sugar of lead, and two grains of calomel. He prefers ice, internally, to stimuli. If there is much purging, he makes use of opium; and to diminish the local congestions, he applies cups and ice. To prevent the return of the paroxysm, his great remedy, is of course, quinine.

Dr. Wharton, of Grand Gulf, Mississippi, applies blisters to the thighs, and sinapisms over the belly. He administers at the same time, every hour or two, from four to seven grains of quinine, combined with capsicum and camphor. Brandy, he says, is often useful in promoting reaction. As soon as this is established, free doses of spirits of turpentine and castor oil are given, and repeated till they produce copious tarry discharges.

Dr. Thomas Barbour, of Pulaski, Tennessee, has published in the *American Journal of the Medical Sciences*, an interesting

paper on the congestive fever of what is called the Tennessee Valley, in North Alabama. His treatment of the disease differs so much, in some respects, from that which is usually adopted, that I think it proper to give an outline of it.

The principal peculiarities, in the method adopted by Dr. Barbour, consist of his means of procuring reaction, during the cold stage of the disease: these means are *bleeding* and the *cold affusion*. In ordinary cases, and where there is no contraindication, from age, intemperate habits, or feeble and broken-down constitutions, he bleeds *cautiously*, from the arm; keeping the finger on the pulse, and watching the effect. If the pulse falters, the orifice is to be closed, and diffusible stimuli given; but if it rises, and becomes fuller and more regular, as it often does, the operation is to be continued till the pulse is well developed. When general bleeding is not proper, free cupping is substituted. A sinapism is applied over the stomach, and small quantities of ice, or iced drink are given. If the bowels are torpid, he makes use of moderate doses of calomel, rhubarb, and ipecac.; if the discharges are thin, he suppresses them with moderate doses of calomel, camphor, and opium. He then resorts to the cold affusion, for the application of which, he gives the following directions.

"Have a broad plank placed upon two chairs, at a convenient distance apart, and place two vessels of hot water on each side, corresponding with the feet and hands; then strip the patient and lay him on his back, on the plank, with his extremities in the hot water—having at hand twenty or thirty gallons of spring water, or, what would be better, water made colder by ice or salt; pour the water from a pitcher, in a full and rapid stream, over the chest and abdomen. The second mode which I adopt, particularly in cases where the brain and spinal marrow are the chief seats of congestion, is to place the patient upon a blanket on the floor, on his side, and then to dash the cold water as forcibly as possible over the head, and along the spinal column. Having applied the water, the patient should be quickly wiped and placed in bed, and covered with two or three blankets, and smartly rubbed, either with dry mustard, flour, or salt, or with spirits of turpentine.

"Under the combined influence of these agencies, reaction, if at all possible, soon ensues; the surface rapidly recovers its na-

tural temperature; the pulse, from being quick and thready, becomes fuller, softer, and more regular; the countenance becomes fuller and more animated; and from insatiable thirst, and uncontrollable restlessness, the patient often experiences so much relief, that it is not uncommon for him to fall into a quiet and refreshing sleep, from which he awakes greatly improved.

"The effects of the cold dash are frequently permanent, and complete reaction takes place, followed by rapid convalescence. In many instances, however, the effects of the first affusion subside, and the patient relapses into his former condition of coldness, restlessness, and insensibility. In such cases, it is proper to repeat the affusion, until complete and permanent reaction takes place, which may be confidently anticipated in a large majority of even the worst cases, provided it is applied sufficiently early."[1]

As auxiliaries to the cold affusion, Dr. Barbour generally applies cups along the course of the spine, over the epigastrium, the right hypochondrium, or the bowels, according to the indications; and stimulants to the skin. When there are strong marks of cerebral congestion, he applies a blister to the back of the head or the neck. He gives light diffusible stimuli, especially porter.

When, by the above means, moderate reaction is procured, he gives from three to five grains of blue mass, five grains of rhubarb, and from half a grain to one grain of opium, every six or eight hours, until the secretions become of natural color and consistence; and from ten to twenty grains of quinine, with from five

[1] Relying upon what are commonly called *rational indications*, in the application of therapeutical means, nothing certainly can well be imagined more absurd and irrational, more directly opposed to all *d priori* considerations, than this use of general bloodletting, and the free affusion of iced water, to remove the collapse of a congestive chill. But these *rational indications*, as they are called, are very frequently, notwithstanding their high pretensions, most untrustworthy and treacherous guides; they lead us astray as frequently as in the right path; and whenever they oppose, as they so often do, the lessons of simple experience, they are to be utterly contemned and disregarded. It cannot be too often repeated, nor too emphatically proclaimed, that therapeutics rests on only one true and immovable basis—that of pure observation; her steps can be guided aright by the light alone of experience. So here, as everywhere else, the utility and value of the new method are to be settled solely by its results. Its apparent unreasonableness or impropriety is not to stand in the way of its adoption, if clinical observation establishes its utility. The practice is said to have originated with Dr. Thomas Fearn, of Huntsville, Alabama. Trial has been made of it by a considerable number of physicians; it deserves further and still more careful study; for its absolute value can hardly be regarded as definitely ascertained and determined.

to ten grains of Dover's powder, every three or four hours. He prefers the morning for the administration of the quinine, and the evening for that of the aperient. If reaction is violent, with signs of local congestion, he again applies cups, and administers calomel, followed by oil, or an infusion of senna with ginger, and repeats either the cold or the tepid affusion. It may sometimes be proper to bleed from the arm; but, under these circumstances, this should be done with extreme caution, as there is danger of excessive prostration. Where the cold stage is protracted for several days, with imperfect reaction, or none, Dr. Barbour thinks but little can be done; but he would rely, under such circumstances, upon the occasional use of the cold bath; large and numerous sinapisms, blisters, hot spirits of turpentine, calomel often repeated, large doses of quinine, and the free use of brandy or porter. Rice water, barley water, arrowroot gruel, or chicken water, are the best articles of diet during the course of the disease and also for several days after convalescence commences. After the strength of the digestive organs has somewhat improved, chicken broth, boiled milk, or milk and mush are appropriate for a few days, after which the patient can return to his usual diet. For drink during convalescence nothing is so good as old porter."[1]

Maillot, an extensive and accurate observer, who saw much of periodical fever, in all its forms, in the French military hospitals in Africa, insists very strongly upon the necessity, in all the pernicious or congestive varieties, of a prompt and bold use of the sulphate of quinine. He says that his medical education and philosophy had impressed him with the common notion that quinine could not be safely given in these diseases, so long as there were signs of local irritation or inflammation present, and only during the apyrexy. His experience amongst the violent congestive fevers of the hot malarious region of Algiers soon convinced him of his mistake; and his use of the great remedy was as free and lavish as that of any of our own practitioners in the Southern and Western States. During the paroxysm, in the comatose and delirious varieties, he recommends general and local bloodletting, and cold applications to the head. Cutaneous revulsives he also regards as important auxiliaries. In the algid

[1] Amer. Journ. Med. Sci., July, 1841.

variety, he endeavors to promote reaction by the free application of sinapisms, and by large doses of ether, given both by the mouth and the rectum. He recommends that compresses, saturated with water and ammonia, be placed along the spine, over which is to be pressed a hot iron; and that after their removal the parts shall be covered with sinapisms. He attaches but small value to cathartics.

It will have been noticed, in the course of the foregoing details, that some of the most important rules of practice, followed by most of the older physicians, in the management of periodical fever, have been altogether disregarded. I allude particularly to the use of quinine, in very large doses, and at all periods of the disease, and without regard to those conditions of the system that have generally been supposed to contraindicate its use. This mode of administering quinine is now almost universally adopted, in the grave forms of congestive fever, by the physicians of the South and West; and both its necessity and its safety have been abundantly demonstrated. *The paroxysms must be arrested, or the patient will die; the only agent in our possession, by which this can be done, is the bark and its preparations; and no time is to be lost in their use.* There is no evidence that, in this form of fever, they have any tendency to increase the intensity of the local irritations.[1]

Dr. Thomas Fearn, of Huntsville, Alabama, more than fifteen years ago, gave the sulphate of quinine in doses of twenty grains, repeated three times, at intervals of one hour; and the credit of having originated this mode of practice has been given to him. The late Dr. Perrine, in a letter to Dr. Dewees, says that he used large doses of the bark, in the treatment of marsh fevers, *given during the paroxysms*, as early as 1819. As soon as quinine was introduced, he used that, in average doses of ten grains, every two hours, *at any period of the disease, without regard to the state of the pulse or skin.* He did not find it to interfere with the simultaneous use of antiphlogistics or stimulants.[2]

Maillot says: "That treatment which in a malarious region

[1] *Note to third edition.*—The practice of administering quinine *early* in the various forms of periodical fever has been becoming more and more general at the West and South within the last few years.—Dr. Drake, *Dis. N. A.*, vol. i. p. 789–798.

[2] Transylvania Journal, vol. vi. p. 301.

attempts to remove local irritations before administering the sulphate of quinine, which waits to convert a grave into a simple intermittent before resorting to febrifuges, prepares for itself inevitable reverses."[1]

Lind speaks of the Dutch in Batavia, as early as 1763, administering bark, without waiting for any remission; and, in grave cases, Cleghorn did the same in Minorca, more than a hundred years ago.

About the *modus operandi* of the sulphate of quinine, I have but a single word to say. Certainly, there is no propriety in regarding it as a simple tonic, or stimulant. In congestive fever, at least, it does not act as a tonic or stimulant; and no known tonic or stimulant can be substituted for it, or supply its place. It is a specific anti-periodic. It is endowed with the peculiar property of arresting or counteracting this pathological process characterized by periodicity; it stands in a special relation to this particular form of disease; and this is the entire sum and substance of our knowledge of the matter—just as easily packed in a nutshell as blown out into an empty balloon.

## ARTICLE III.

### INTERMITTENT FEVER.

It is hardly necessary to enter at any considerable length into the details of the treatment appropriate to the simple intermittent form of periodical fever. The management of simple *chills and fever* has been, to a very great extent, taken out of the hands of medical men, and entrusted to those of the patients themselves and their friends. This management consists almost exclusively in the use of the sulphate of quinine; with occasionally, perhaps, a simple or a mercurial purgative. The quinine is usually given during the intermission, and in various doses—from one or two to eight or ten grains.

Amongst persons constantly residing in malarious localities, intermittents frequently become obstinate, irregular, and protracted. In these cases, and in the simple forms, when the latter resist the influence of quinine, various substitutes for this sub-

[1] Traité des Fièvres, etc., p. 81.

stance have been made use of. Amongst these, the most important are arsenic, and some of the bitter vegetables—Cornus Florida, or dogwood, chamomile, thoroughwort, and so on. There is no doubt at all of the anti-periodic property of arsenic; and in those cases to which I have referred, it may sometimes be used with advantage. So, an infusion of one of the vegetables just mentioned will occasionally be found more efficacious in arresting the paroxysms than even the bark itself; and when the disease does not yield to its usual remedy, it is well to employ them.

In regions where marsh fevers are extensively prevalent, there are many remedies and modes of practice besides those already mentioned, which acquire a popular celebrity. Most of them produce a pretty sudden and powerful impression, either upon the mind or the body, and in this way they frequently break up the disease. I shall mention particularly only one other remedy, and that is opium. This substance has been a good deal used in the treatment of periodical fever, and there seems to be no doubt of its great value. The following interesting account of its action and effects is by James Lind, who, for a long period during the last century, was a careful and extensive observer of periodical fever. His testimony in regard to its advantages is so emphatic and decided that I feel bound to introduce it. The history of his experience is thus related. Having given a dose of opium in an obstinate case of ague, on account of some accidental symptom, to the great relief of the patient, he concluded to try the remedy more extensively. "Having, at that time," he says, "twenty-five patients laboring under intermitting fevers, I prescribed an opiate for each of them, to be taken immediately after the hot fit, provided the patient had any inquietude, headache, or similar symptom, subsequent to the fever. The consequence was, that nineteen in twenty-two received immediate relief; the other three had no occasion to take it.

"Encouraged by this success, I next day ordered the opiate to be given during the hot fit. In eleven patients out of twelve to whom it was thus administered it removed the headache, abated the fever, and produced a profuse sweat, which was soon followed by a perfect intermission. Since that time, I have prescribed an opiate to upwards of three hundred patients laboring under that disease. I observed that, when given during the intermission, it had not any effect, either in preventing or mitigating the succeed-

ing fit; when given in the cold fit, it once or twice seemed to remove it; when given half an hour after the commencement of the hot fit, it generally gave immediate relief.

"The effects of opium, given in the hot fit of an intermitting fever, are these: First, it shortens and abates the fit; and this with more certainty than an ounce of bark is found to remove the disease. Second, it generally gives a sensible relief to the head; takes off the burning heat of the fever, and occasions a profuse sweat. This sweat is attended with an agreeable softness of the skin, instead of the disagreeable burning sensation which usually affects patients sweating in the hot fit, and is more copious than in those who are not under the influence of opium. Third, it often produces a soft and refreshing sleep to patients before harassed with fever, from which they awake bathed in sweat, and in a great measure free from complaint.

"I have always observed that the effects of opium are more uniform and constant in intermitting fevers than in most other diseases, and are then more quick and sensible than those of most other medicines. An opiate thus given, soon after the commencement of the hot fit, by abating the violence and lessening the duration of the fever, preserves the constitution in a great measure uninjured. Since I have used opium in agues, a dropsy or jaundice has seldom attacked any of my patients in these diseases.

"In cases where opium did not immediately abate the symptoms of the fever, it never augmented their violence. On the contrary, most patients reaped some benefit from an opiate given in the hot fit; and many of them bore a larger dose of opium at that time than at any other. Even a delirium in the hot fit is not increased by opium, though opium will not remove it. If the patient be delirious in the fit, the administration of the opiate ought to be delayed till he recovers his senses; an opiate will then be found to relieve the weakness and faintness which commonly succeed the delirium."[1]

Dr. Drake says of opium in the treatment of malignant intermittents: "Of its great value no physician of experience, in those diseases, can entertain a doubt. If there be no diarrhœa, however, it is not necessary to administer it throughout the intermission, but reserve it for the last dose of the sulphate, before

[1] Lind on Hot Climates, Phila. ed., p. 286.

the approaching chill. The quantity in which it is then given, is often entirely too small, and much better fitted to simple intermittents, in which the susceptibilities of the system are lively, than to those in which they are greatly reduced. In such a state of the system, three or four times as much as would be required in an ordinary ague, is not a *large* dose. I have met with many physicians who had a just appreciation of this state of the system; but with none who carried the practice logically deducible from it, so far as Dr. Merriman and Dr. Henry, of Springfield, Illinois. It has grown into a settled opinion with those gentlemen, that a moderate quantity of the sulphate, combined with a large quantity of opium, is the very best practice. Hence through the early periods of the intermission, they do little or nothing; but three or four hours before the chill, administer a bolus of four grains of opium and eight grains of sulphate, which, as they affirm, scarcely ever fails. Dr. Henry has even found that dose of opium, without the other medicine, successful. Dr. Jayne pursues the same practice, but generally limits the opium to two grains."[1]

To prevent the occurrence of relapses, I know of no means of any value, except an occasional use of the bark; a careful regulation of the diet and exercise, so as to keep the system in as vigorous a tone as possible; and an avoidance of the night air, and of all the ordinary exciting causes of disease. There is only one means certainly to be depended upon, and this consists in a removal beyond the influence of the malarious poison.

For the removal of the various remote consequences of the disease which have already been enumerated, no very particular rules can be given. The local engorgements of the liver and spleen—especially of the latter—so long as they are simple engorgements, without any fixed change of structure, are to be met by the means already indicated, particularly by quinine, paying attention at the same time to the state of the bowels and secretions. When these engorgements have been so long continued and so often repeated, as to result in chronic structural alterations, only palliative effects can be looked for from remedies. The headache and other cerebral troubles, which sometimes follow the disease, and which seem to be connected with a kind of nerv-

[1] Dr. Drake on the Diseases of North America, vol. i. p. 776.

ous erethism, may generally be removed by shaving the head and keeping it cool; by quiet and rest; and a careful regulation of all the organic and animal functions. Neuralgic affections are to be treated upon the same general principles. There can be but little doubt, that a free and persevering use of cold water, externally and internally, with a plain but substantial diet, and active exercise in the open air, would constitute the best possible treatment in many of these cases. The best special remedy for the anemic condition which the disease frequently leaves behind it consists in the different preparations of iron.

# CHAPTER XII.

## BIBLIOGRAPHY.

*Observations on the Epidemical Diseases of Minorca, etc. By George Cleghorn, M. D. Philadelphia*, 1812. This admirable little book was written more than a century ago. It is a model of the class to which it belongs, and a fit companion to Hillary's similar book on the diseases of Barbadoes. Dr. Cleghorn's description of the several forms and varieties of malarious fever is very full and complete; and the disease seems to have been as judiciously and efficiently treated, a hundred years ago, as it is now —excepting in the advantages derived from the possession of quinine. Dr. Cleghorn used the bark *early and freely;* and he regrets that he had not always given it with as much freedom as he did during the last seven years of his practice in Minorca. *In grave or threatening cases, he urges the importance of the bark, without regard to the state of the system—the presence of offendiny matters in the bowels, the existence of local inflammation, and so on.*

*A Treatise on the Hidden Nature, and the Treatment of Intermitting and Remitting Fevers, etc. By Jean Senac. Translated from the Latin, by Charles Caldwell, M. D. Philadelphia*, 1805. Senac's book is one of the classics in this department of medicine. He practised in Paris, during the reign of Louis XV., when periodical fevers were more common than at present. His treatise is systematic and elaborate; his description of the mixed, irregular, and masked forms of the disease is particularly full and valuable. He speaks of the bark as a *divine discovery.* The *Treatise* has a good deal of useless rationalism; but its practical portion is excellent, and it is, on the whole, a capital old book.

*Observations on the Causes and Cure of Remitting, or Bilious Fevers. By William Currie, M. D. Philadelphia*, 1798. I have already, on other occasions, had the pleasure of commending

this excellent little book. Its style is clear, simple, and unpretending; its descriptions are full and accurate; and it is quite free from the false philosophy which pervades, obscures, and vitiates, all the writings of Dr. Currie's great contemporary and fellow-citizen, Dr. Rush. The radical differences between bilious remittent and yellow fever, are very fully and clearly stated.

*An Essay on the Diseases of Hot Climates, etc. By James Lind, M. D. Philadelphia*, 1811. This somewhat celebrated work contains short and cursory notices of many of the localities in hot climates, which are in the hands of the more northern nations, or which are often visited by Europeans; and of the principal diseases—especially fevers—to which they are subject. The book is marked by good sense; though its contents are not now of any special value.

*The Influence of Tropical Climates on European Constitutions, etc. By James Johnson, M. D.* This is the celebrated work of the celebrated editor of the *Medico-Chirurgical Review*, on the diseases of hot climates. There are few medical books which have been so extensively read in this country; there are few that have been so generally popular; and there are none that have been so over-estimated and over-praised. No English work has, directly and indirectly, exerted so powerful an influence upon medicine in the Western States as this.[1] This influence may be distinctly seen, not only in the popular pathology and practice of these States, but in the prevailing style of writing, and modes of expression, amongst medical men. The style of Dr. Johnson's book is free, fluent, rambling and slashing, with a copious sprinkling of scraps of poetry, native and foreign. His pathology abounds in *excitability, venous congestion, stagnation of the blood in the portal circle, balance of the circulation*, and similar hypothetical fancies. His descriptions of disease are entirely without value. One of the most sensible remarks in the book is this: "The opinion that these grand endemics, yellow fever, for instance, are only the bilious remittents of all tropical climates, in a more concentrated state or degree, is founded, I fear, on too great a rage for generalizing."

[1] The monstrous pathology of Dr. Cooke, and the still more monstrous practice growing out of it, are only elaborate exaggerations and caricatures of the pathology and therapeutics of this work.

*Traité des Fièvres Pernicieuses Intermittentes. Par J. L. Alibert. 5th edit. Paris*, 1820. This work of Alibert is mostly a compilation; and I have been able to find but very little in it of any value.

*Traité Anatomico-Pathologique des Fièvres Intermittentes, Simple et Pernicieuses; etc. Par E. M. Bailly, de Blois. Paris*, 1825, pp. 535.

This is a large and substantial treatise upon periodical fever. Its author is a Frenchman, who studied his subject mostly at Rome, in the year 1822, amongst the patients of the great hospital of the Holy Spirit. Altogether the least valuable portion of the book is the first long chapter of one hundred and twenty pages. This is made up of a very elaborate and very tedious statement and development of the author's notions about the *nature* of periodical fever, the cause of periodicity, &c., with theories of waking and sleep, inflammation, and crises. I will merely say of it, further, that he attributes the phenomenon of intermittence to the diurnal change which takes place in the position of the human body. It would be an idle and a useless task to repeat the reasoning which leads him to this conclusion. It is a great pity, that so sensible a writer should attach so much importance to speculations so entirely empty and visionary. The great fault of the book consists in its diffuse verbosity, and its constant efforts to explain and interpret the phenomena of disease. There is nothing of any special importance in its therapeutics. The author insists earnestly upon the twofold element constituting periodical fever—the nervous disturbance, and the local congestions and inflammations—and his principal means for meeting the double indication, growing out of this pathological doctrine, consist of bloodletting, purgatives, and cinchona. The latter he regards, not as a stimulant or tonic, but as a peculiar anti-periodic, and nervous sedative. Ligatures upon the limbs, he says, will frequently prevent the occurrence of an expected paroxysm.

*An Essay on the Remittent and Intermittent Diseases, including generically Marsh Fever and Neuralgia. By John Macculloch, M. D., F. R. S., etc. etc.* Dr. Macculloch vaults at once into the saddle of his hobby, by announcing, in the first sentence of his preface, his conviction of the intimate dependence of neuralgia upon intermittent fever. The leading idea of the whole work is

to be found in the almost boundless extent and variety of action which he attributes to malaria, in the production of disease; its leading, philosophical error consists in this broad, loose, and sweeping generalization. Dr. Macculloch's style is involved and clumsy; but he writes from clear and strong conviction, and no one can wade through the episodical but racy prolixity of his heavy pages, without a strong feeling of his logical acuteness, his good sense, and his freedom from professional cant. His hardest and favorite hits—well merited and well put in—are at Sangradoism, asceticism, and the then fashionable practice of daily purging with "calomel and salts." There are other and more extensive localities than the British islands which might profit by his warnings.

*Sketches of the most prevalent Diseases of India. By James Annesley, Esquire. London*, 1829. Mr. Annesley had ample opportunities for the study of periodical fever, in its several forms, during his residence in the British East Indies; but he has contributed very little in this work to our knowledge on this subject. There is no description of the fever, and the book is overloaded with gratuitous and hypothetical fancies, which the writer very sincerely and honestly mistakes for *principles!*

*Traité des Fièvres, ou Irritations cerebro-spinales Intermittentes, d'après des observations recueilles en France, en Corse, et en Afrique. Par F. C. Maillot. Paris*, 1836, pp. 420.

In an earnest and straightforward *introduction* of only five pages, M. Maillot awakens the interest and wins the confidence of his readers. He indicates the general character of his work, and makes amongst others these two remarks. In the midst of the numerous works, he says, which have followed each other upon this obscure subject of intermittent fever, there is one idea which is tending to become more and more predominant, namely, that which refers these fevers to a lesion of the nervous system. This, he adds, was the opinion of Boërhaave, of Cullen, of Borelli, of J. P. Frank, of Foderé, of Giannini, of Georget, etc.; and in the present day of Alibert, Rayer, Bricheteau, Brachet, Nepple, and others. The cerebro-spinal axis he looks upon as the point of departure of the series of morbid actions constituting periodical fever; but pathological anatomy has demonstrated, he says, that there is something superadded to the neurosis, and that this is an acute irritation or hyperæmia of the great nervous centres. The

treatment, he says, which consisted in removing or attempting to remove the local irritations and congestions, before the administration of cinchona was allowed, *failed in hot climates and malarious regions; and it became necessary to fall back upon the method of Fore, that of giving large doses of this remedy during the paroxysm, and while the tongue indicated active gastric excitement.* I have made free use of Maillot's excellent and accurate observations in various parts of my book. He has contributed largely to our knowledge of periodical fever, especially as it shows itself in hot climates. Every part of his work abounds in positive and reliable information; and it is generally pervaded by a cautious and sound philosophy. It is interesting to witness the exact coincidence between his convictions—the result of extensive experience, forced upon him in opposition to his previous opinions—and those of many observers in our own country, of the safety and necessity of large doses of quinine, in the graver forms of periodical fever, regardless alike of any signs of local irritation or inflammation, and of the particular period of the disease. In one of his reported cases of comatose intermittent, occurring at Bona, in 1835, he gave, in the course of a few hours, eighty grains of sulphate of quinine, by the stomach, and sixty in an injection, all during the paroxysm. On the second day, the patient took forty grains, and twenty-four on the third; the following day, he was convalescent.

*Medical History of the Expedition to the Niger, during the years* 1841 *and* 1842, *etc. By James Ormiston M'William, M. D.* In the year 1841, an expedition was fitted out by the British government, to the River Niger in Africa—the leading object of which was to promote the abolition of the slave-trade. The expedition consisted of three iron steam-vessels, the Albert, the Wilberforce, and the Soudan; and of one transport for stores. The expedition left England in May, 1841, and entered the Niger on the 13th of August. When the four vessels entered the new branch of the Niger, the following was their complement of officers and men—many of the Kroomen and liberated African boys having joined the vessels on the coast: Officers, 53; white seamen, 63; marines and sappers, 29; men of color entered in England, 25; Kroomen and liberated Africans, entered on the coast, 110; blacks for model farm, 23; grand total, 303. The expedition went on very successfully, the officers and men all in

good health and high spirits, until it had passed the delta of the river, and arrived at the town of Iddah, in the kingdom of Eggana, nearly two hundred and fifty miles from the mouth. This was on the 2d of September, and on the 4th, fever of a most malignant character appeared in all the vessels. It spread with great rapidity; and on the 9th, the first death took place, that of the captain's steward, of the Soudan. On the 11th, there were two deaths; on the 17th, there were sixty-nine sick, and there had been seven deaths. On the 19th, the Soudan, with forty cases of fever on board, started for the mouth of the river; and on the 21st, the Wilberforce followed; leaving the Albert to go on her dreary way alone—convoyed by tornadoes, tempests, savagery, pestilence, and death. By the 3d of October, the Albert having reached Egga, some three hundred and fifty miles from the sea, there were only seven persons on board well enough to do duty, and the Albert also abandoned the enterprise, and turned her prow towards the Atlantic. On the 8th, in the night, one of the patients, in delirium, jumped overboard, but was saved; the next morning, the second engineer threw himself into the river, and was drowned. On the 17th, the three steamers arrived at the island of Fernando Po. "On the 16th of December," says Dr. M'William, "Dr. Vogel, the botanist of the expedition, died, and in the evening his body was deposited in the burial-ground at Fernando Po, by torchlight. It was pitch dark, and the stars, seen through the dense foliage, were the only objects in nature that relieved the surrounding dismal gloom. At every step, we trod over our former messmates or fellow-laborers. As near as possible to the grave of Lander, lie thirteen of the Niger expedition, who, like himself, fell in the cause of Africa." The whole number of deaths from fever, during the expedition, was forty-two; all of which were amongst the whites. The whole number of whites, in the three steam-vessels, up and down the Niger, was one hundred and forty-five; all these were attacked except fifteen. The whole number of blacks was one hundred and fifty-eight; of whom only eleven had the fever, and these in a mild form.

Dr. M'William's description of the disease is very incomplete and unsatisfactory. It was evidently remittent, many of the cases being congestive or malignant. There was no case of black vomit; and, indeed, there seems to have been little or no resem-

blance between it and yellow fever; although Dr. M'William not only makes no distinction between the two diseases, but evidently confounds them.

Dr. M'William was sent in 1846, by the Admiralty Commissioners, to investigate the circumstances attending the prevalence of a malignant disease, at Boa Vista, one of the Cape de Verd Islands, in 1845. The disease, which was yellow fever, showed itself first on board the British ship Eclair, during the passage from the coast of Africa. It occurred at Boa Vista, for the first time, *nearly a month* after the departure of the Eclair.

*A Practical Medico-Historical Account of the Western Coast of Africa, etc. By James Boyle, London*, 1831. Mr. Boyle occupied different positions as a medical officer, in the British stations on the western coast of Africa, between the years 1822 and 1831. His volume, of more than four hundred pages, constitutes, he says, the first systematic treatise on the diseases of western Africa. It is very desultory and immethodical in its plan, and is written in an awkward and ungraceful manner. The first seventy pages are occupied with the medical topography of the western coast, from the River Gambia southward to Sierra Leone. Sluggish, muddy rivers, swarming with alligators, hippopotami, and mosquitoes, their low banks covered with a rank growth of bush and mangrove; deluging rains and devastating tornadoes, one-half the year, and the fiery and blinding harmatan the other; and an average temperature, during each of the twelve months, of at least 80° of Fahrenheit, make up the prominent features of the scene! Mr. Boyle describes two forms of endemic fever—the *climatorial bilious remittent*, and the *local endemic bilious remittent*, as he calls them. There is no evidence that there is any essential difference between them. His descriptions of the African fever are very short, sketchy, and imperfect. The strongest impression left upon the mind by the reading of this book, is that of the terribly pestiferous and malignant character of this region, so far as the northern races are concerned. Surgeon Tedlie says that, although the Gold Coast has a moderate range of temperature, the mercury rarely rising higher than 85°, or falling lower than 76°, it is more unfriendly to the European constitution than any other country on the face of the globe. No European, he says, ever escapes the fever. The first attack is the regular remittent, called the seasoning, after which the

person is still subject to remittents and intermittents, more or less irregular in their character. Yellow fever rarely occurs on the coast. It visited Sierra Leone in 1823 and 1829, attacking old residents as violently as more recent comers.

The articles on intermittent and remittent fever, in the *Library of Practical Medicine*, are by Dr. Shapter. They are compilations; and, so far from containing anything new, they are very far from embodying our actual knowledge upon the subjects of which they treat.

The articles in the *Cyclopædia of Practical Medicine* are by Dr. Joseph Brown. The same remarks may be made of them, as of the foregoing.

The American Medical Journals contain many original articles upon the several forms of periodical fever, of much value.

*A Systematic Treatise, Historical, Etiological, and Practical, on the Principal Diseases of the Interior Valley of North America as they appear in the Caucasian, African, Indian, and Esquimaux varieties of its Population. By Daniel Drake, M. D. Cincinnati*, 1850: pp. 878.

This is the first volume of the great work of the learned and veteran physician of the West, Dr. Drake, on the Diseases of the Interior Valley of North America. It has been long promised by its distinguished author, and impatiently waited for by his many friends and pupils, throughout that wide and wonderful region, where his name has been a familiar household word for so long a period of time. These friends and pupils, and the profession generally, will not be disappointed, I think, in this result of Dr. Drake's labors. This first volume contains the fruits of a vast amount of personal observation and research, as carefully and thoroughly made as circumstances allowed. It is an immense magazine and storehouse of important and valuable facts, from which all future historians and observers, working in the same great field, will derive many of their best aids and their richest materials.

# PART FOURTH.

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THE

## HISTORY, DIAGNOSIS, AND TREATMENT

OF

# YELLOW FEVER.

# PART IV.

# YELLOW FEVER.

## CHAPTER I.

### NAMES OF THE DISEASE.

YELLOW FEVER has received a goodly number and variety of appellations; this, its most common name with English, French, and American writers, was very naturally derived from that striking and common phenomenon in its natural history, the yellow discoloration of the skin. One of its earliest names was that of *mal de Siam—disease of Siam*—first given to it by the Dominican, Father Labat, near the close of the seventeenth century, from the belief that it was derived from that country. Chisholm calls it a *Malignant Pestilential Fever;* Lempriere calls it *Tropical Continued Fever;* Burnett calls it *Mediterranean Fever;* many call it the *Bulam or Boullam Fever;* and various other names have been given to it. Amongst the many names which systematic writers have applied to it are the following, to wit: *Typhus icterodes; Elodes icterodes; Febris maligna biliosa Americæ; Causus tropicus endemicus, etc. etc.*

# CHAPTER II.

## SYMPTOMS.

### ARTICLE I.

#### MODE AND PERIOD OF ACCESS.

YELLOW fever is almost always marked by a distinct and formal access, so that the precise period of its commencement can be generally fixed with great precision and certainty. The most constant initiatory symptoms are chills; and pains, often violent, in the head, back, and limbs—the latter not unfrequently being very severely felt in the calves of the legs. Dr. Barrington, in his account of the disease, as it prevailed on board the vessels of the United States Navy, and at Pensacola, in 1828, 1829, and 1830, says that, in a few cases, the fever was ushered in by an acute pain felt in some spot, and afterwards becoming general. "In one patient, on board the Grampus, the penis was the seat of this suffering; in another, the attack was announced by a neuralgic affection of the right temple. In several, the knees were alone complained of at first; and in four patients, in the Hornet, a spasmodic affection of the muscles of the leg was the prelude."[1] In what proportion of cases this well-marked commencement of the disease is preceded by premonitory symptoms, I am unable to say with any degree of accuracy, the statements of most observers upon this point being made only in general terms. It is quite certain, however, that, in many instances, the person receives no warning of the approach of the disease; he is stricken down in an instant, no shadow of the coming blow having fallen upon him. Dr. Rush, in his description of the yellow fever of 1793, in Philadelphia, says: "Many went to bed in good health, and awoke in the night with a chilly fit. Many rose in the morning, after regular and natural sleep, and were seized at their work,

[1] Amer. Journ. Med. Sci., Aug. 1833.

or after a walk, with a sudden and unexpected attack of the fever."[1] Dr. Barrington says that, in a majority of instances, the onset was without any previous indisposition.

In other cases, this distinct commencement of the disease is preceded for some hours, or for some days, by certain premonitory symptoms. There is nothing constant or invariable in the character of these; sometimes they consist of moderate febrile excitement, and at others of various disturbances of the nervous and digestive functions. Dr. Rush enumerates nearly twenty of these precursory signs; but they are, none of them, sufficiently uniform in their occurrence, or sufficiently characteristic of the disease, to render it worth while to repeat them.

It is alleged by many observers, that the attack of yellow fever occurs much more frequently during the night than during the day. Dr. Rush says: "A great proportion of all who were affected by this fever were attacked in the night."[2] Dr. Barrington says, that the time of the onset was generally between sunset and sunrise.[3] Dr. T. A. Cooke, in a paper in the *New Orleans Medical and Surgical Journal*, on the Epidemic Yellow Fever which prevailed at Opelousas, in the years 1837, 1839, and 1842, says that, in the two former years, the attack came on suddenly, rarely with premonitory symptoms, and, in a large majority of cases, between the hours of midnight and daybreak. I do not know that this greater liability to an attack of the disease during the night is formally contradicted by any writers; but there are many who say nothing about it; and it can hardly be regarded as an unreasonable skepticism to say that the question must be determined by further, more extensive, and more accurate observation. In his description of the epidemic of 1828, at Gibraltar, Louis merely remarks that the disease commenced at different hours of the day, sometimes in the night; and I find, on looking over the only cases, seven in number, reported by him, in which the time of attack is particularly mentioned, that this was during the day in two; at five P. M., seven P. M., and eight P. M., in one each; in the morning, in one; and in the night, in one. Of five cases, occurring in the Charity Hospital, at New Orleans, in 1843, and reported by Dr. Slade, the attack took place during

[1] Rush's Med. Inq., vol. iii. p. 52.
[2] Ibid., vol. iii. p. 51.
[3] Amer. Journ. Med. Sci., Aug. 1833.

the day in one; and at five A. M., eight A. M., and eleven A. M.' in one each.[1] Dr. E. B. Harris has reported twenty cases, which occurred at New Orleans, in 1833. The time of attack is particularly stated in sixteen, and in only two of these was the attack in the night.[2]

## ARTICLE II.

### FEBRILE SYMPTOMS.

SEC. I.—*Chills.* There is probably no disease, unless it is puerperal peritonitis, the access of which is more invariably attended by a chill or rigor than this. The testimony of observers is so uniform upon this point, that it is quite needless to accumulate authorities. It is present alike in mild, grave, and fatal cases, with one exception, perhaps, which will be mentioned hereafter, in speaking of a very singular and striking form or variety of the disease. The chill is almost always one of the first symptoms; although, in a very few cases, it takes place some hours, or even a day or two, after the formal commencement of the fever. The chill is sometimes severe, but generally moderate, of short duration, and is rarely though it is occasionally repeated.

SEC. II.—*Temperature of the Surface; Sweats.* Following the initial chill, there is frequently increased heat of the surface; *but this heat is only moderate.* The high and burning heat of continued fever, and of some of the eruptive fevers, is never present; and in very many cases the skin never rises above its natural temperature. The increased heat, in those cases where it is present, rarely continues beyond the second or third day; rapidly giving place, in cases that are running on towards a fatal termination, to coldness of the surface, beginning usually in the extremities, and more striking here than in other parts of the body. According to Louis and Trousseau, coldness of the lower extremities is a very constant attendant upon the *black vomit*, a symptom that will be particularly described hereafter.

In a certain number of cases, there is more or less perspiration; in others, the skin preserves its natural softness and moisture;

[1] N. O. Med. and Surg. Journ., vol. i. p. 85. [2] Amer. Journ. Med. Sci., May, 1834.

it is not often morbidly dry. Dr. Lewis, of Mobile, says there is a natural tendency to perspiration. Dr. John Wilson says the state of the surface differs in the two forms of the disease—the *inflammatory* and the *congestive*. "In the former, the heat of the skin is high, free, and diffused; it impresses the hand instantly and powerfully, being nearly as intense at the extremities as at the centre, sometimes even more so. In the latter, the heat of the surface is frequently less than in health, particularly on the extremities. When it equals or surpasses the healthy standard, as it sometimes does, being highest about the epigastrium, it is of a peculiar kind. The hand is scarcely impressed by it, when applied lightly and hastily to the pit of the stomach, but when kept there with steady pressure, a sensation of deep-seated and accumulated heat is communicated. * * * With this peculiar condition of the surface as to temperature, there is connected a peculiar want of tone in the skin, which it is difficult to render intelligible by description. It is sometimes dry, harsh, and dense; sometimes moist, when a thin, serum-like fluid, or a greasy exudation; sometimes it is smooth, slippery, inelastic, and doughy without moisture; but in whatever manner its functions may be perverted or abolished, its characteristic condition is want of vitality: when grasped in the hand, and raised from the parts beneath, it feels like the skin of one who had ceased to breathe."[1]

The color of the skin will be more appropriately noticed in another place.

SEC. III.—*Pulse.* It is not an easy matter, for one who has never felt the pulse of a yellow-fever patient, to form any very distinct and clear idea of its character and peculiarities; so contradictory, and sometimes so apparently fanciful, are the descriptions of it by different observers. On one point, however, and that is, its frequency, there is great uniformity in the statements of writers. The pulse never reaches the frequency that is so common in nearly all other febrile and inflammatory affections. Louis and Trousseau, at Gibraltar, even in cases that terminated fatally, never found it higher than a hundred in a minute, and this in only five instances, and for a single day. In cases that recovered, they generally found it only slightly accelerated, and

[1] Memoirs of West Indian Fever, p. 20.

this for a day or two only, at the beginning of the disease, after which it rapidly fell to its natural standard.[1]

As to its other characters, it is commonly described as natural, or more or less full, tense, and bounding. In eight fatal cases, Louis and Trousseau found it large and vibrating in one; a little stronger than natural in two; almost natural in two, and small and serrated in three. Amongst the patients who recovered, they found the pulse large and rather full on the second or third day of the disease, in half the cases; small and feeble during the first days, in only two cases; and natural in the rest.[2] It is generally regular, but sometimes unequal and intermittent towards the close of the disease. Dr. Rush devotes more than three full pages to a description of the pulse, a considerable portion of which description is not particularly clear or intelligible. He mentions several occasional peculiarities of the pulse, such as irregularity, intermission, preternatural slowness, and so on. He has a great deal to say about a small, intermitting, tense, corded, and slow pulse, which he thought was peculiar to certain forms of yellow fever; which one of his pupils characterized as an *undescribable pulse*, and which he called a *hobbling* or a *sulky* pulse.[3] My personal friend and former pupil, Dr. P. H. Lewis, of Mobile, has published, in the first volume of the *New Orleans Medical and Surgical Journal*, a valuable and interesting paper on the yellow fever of that city, to which I shall have occasion frequently to refer. Since the publication of my second edition, our profession and our science have sustained a serious loss in the premature death of this active, laborious, and able physician. His observations were mostly made amidst the hurry and confusion inseparably attendant upon epidemic visitations of disease, and they

[1] Louis on Yellow Fever, p. 208. [2] Ibid., p. 209.

[3] Dr. Rush, enlightened by the blaze of that luminous philosophy which surrounds all his medical writings, met with no difficulty in understanding and accounting for this perverse and unreasonable pulse; he said it was occasioned by a spasmodic affection, accompanied with preternatural dilatation or contraction of the heart! The slow, feeble, and intermittent pulse have been improperly ascribed, says Dr. Rush, to the absence of fever. They are occasioned, he adds, "by the stimulus of the remote cause acting upon the arteries with too much force to admit of their being excited into quick and convulsive motions;" there being a deficiency of strength in the artery from an excess of force applied to it, as Milton describes a darkness from an excess of light! The illustration from Milton is Dr. Rush's —not mine.

necessarily partake somewhat of the imperfections unavoidable under such circumstances; but they are marked by carefulness, acuteness, and conscientiousness, and constitute a valuable addition to our knowledge of yellow fever. Dr. Lewis says that, *during the sort of remission which follows the first febrile reaction*, and which he calls, after a medical friend, *the stage of calm*, the pulse is usually about or below par, and to many would appear natural. "But, so far from being normal," he adds, "there are gentlemen in Mobile, who, blindfolded, can separate it from all others. It comes up to the finger like an air-bubble, and rebounds under the least pressure; again, there is not that strength and lengthened vibrating feeling, which belong to the healthy pulse. Dr. Childress, who has been practising in the South thirty-five years, remarked to me, that it was the most deceptive pulse he had ever felt; at first appearing natural, but, upon examination, *there was none of it.*" This pulse is spoken of by Dr. Lewis, in another place, as *full and bubbling*, compressible and gaseous, rebounding under the least pressure of the finger. He says, also, that in twenty cases, in which the three stages—the febrile, the stage of calm, and that of collapse—were well defined, he found the mean range of the pulse, for two days, between 90 and 115, for one day about par, and for three and a half days below par; the average range of the pulse during the whole course of the disease being rather below the natural and healthy standard. This compressible character of the pulse is particularly noticed by some of the older writers. Chisholm says: "It is observable that, in several cases, the slightest pressure could produce a cessation of pulse."[1] A sufficiently obvious reason for the contradictory descriptions which are to be met with, of the pulse in yellow fever, may be found in its different characters in the different forms and stages of the disease. Dr. John Wilson says that, in the inflammatory variety, the pulse is remarkable for its strength, forcibly repelling the finger, and not yielding to ordinary pressure. In the congestive form, he says, it is always weak. "It offers no resistance to the touch: when the finger is applied to an artery, it acts as it would on an inanimate elastic tube half full of fluid; it depresses easily the point on which it bears into contact with the opposite point, the contents receding in either

[1] Chisholm's Essay, vol. i. p. 162.

direction. This state of the pulse is so striking and characteristic, that I think it can scarcely be overlooked or misapprehended."[1]

## ARTICLE II.

### DIGESTIVE AND ABDOMINAL SYMPTOMS.

SEC. I.—*Tongue and Mouth.* The tongue is generally moist, and more or less coated with a light-colored, whitish, or yellowish-white, villous fur. It is sometimes red, and towards the close of life in fatal cases, sometimes dry, red, and cracked, like the tongue of continued fever. In many instances, it remains nearly natural through the entire course of the disease. Dr. Rush says: "The tongue was in every case moist, and of a white color, in the first and second days of the fever. As the disease advanced, it assumed a red color, and a smooth, shining appearance. It was not quite dry in this state. Towards the close of the fever, a dry black streak appeared in its middle, which gradually extended to every part of it."[2] Dr. Gillkrest says, the most characteristic appearance of the tongue is that of the pasty surface, with red edges and apex; and further that the red, or as it has been called by some crimson border of the tongue ranks among the most characteristic signs in the first stage of the malady.[3] Bally and some others, especially amongst Spanish observers, speak of an abundant spontaneous salivation as a common occurrence. It is rare to find sordes on the teeth.

SEC. II.—*Appetite and Thirst.* It is a little singular how generally writers upon yellow fever neglect to give any particular account of the state of the appetite; many of them, indeed, make no mention of it whatever. Even Louis and Trousseau say nothing special about it. Dr. Rush says: "The appetite for food was impaired in this, as in all other fevers, but it returned much sooner than is common, after the patient began to recover. Coffee was relished in the remissions of the fever, in every stage of the disease. So keen was the appetite for solid, and more especially

[1] Memoirs of the W. Indian Fever, p. 19. [2] Rush's Med. Inq., vol. iii. p. 63.
[3] Cyc. Prac. Med., vol. ii. pp. 270, 273.

for animal food, after the solution of the fever, that many suffered from eating aliment that was improper from its quality or quantity. There was a general disrelish for wine, but malt liquors were frequently grateful to the taste. Many people retained a relish for tobacco much longer after they were attacked by this fever, and acquired a relish for it much sooner after they began to recover than is common in any other febrile disease. I met with one case, in which a man, who was so ill as to require two bleedings, continued to chew tobacco through every stage of his fever."[1]

The remark that has just been made in regard to the general omission by writers on yellow fever of any particular description of the state of the appetite is also applicable to the thirst: by many, this symptom is not mentioned at all, and by most others, it is spoken of only incidentally. It would seem, as a general rule, to be only moderate. Dr. Rush says: "The thirst was moderate or absent in some cases, but it occurred in the greatest number of persons whom I saw in this fever. Sometimes it was very intense. One of my patients, who suffered by an excessive draught of cold water, declared, just before he died, that he could drink up the Delaware. It was always an alarming symptom, when this thirst came on in this extravagant degree in the last stage of the disease. In the beginning of the fever it generally abated, upon the appearance of a moist skin. Water was preferred to all other drinks."[2] Sir Gilbert Blane says there is no excessive thirst.[3] Dr. Devèze, in his description of the Philadelphia epidemic of 1793, says that, during the first stage, the degree of thirst corresponds to the febrile heat; and that in the second stage it is unappeasable.[4] Bally says there is rarely any considerable thirst; and he quotes Jackson, Chisholm, and Clark, to the same effect.[5] Dr. Lewis of Mobile, in a letter to me, dated September 26, 1847, says: "In genuine yellow fever, the thirst is not urgent. It is true the patient often says he is thirsty; that he wishes he had a cold stream running through him; but when water is handed to him, he drinks very sparingly, saying that it lays on his stomach, or produces pain at the epigastrium.

[1] Rush's Med. Inq., vol. iii. p. 67.
[2] Ibid., p. 66.
[3] Observations, &c., p. 404.
[4] Traité de la Fièvre Jaune, p. 22.
[5] Du Typhus d'Amerique. Par Vr. Bally, p. 216.

Others have no desire for cold drinks, but take warm tea without objecting."

Sec. III.—*Nausea and Vomiting.* Amongst the most constant, and in certain circumstances the most striking and characteristic phenomena of yellow fever, are nausea and vomiting, especially the latter. In a certain proportion of cases, the vomiting occurs in the course of the first day of the disease; in the others, on the subsequent days, from the first to the fifth. In cases which terminate fatally, the vomiting almost always, after it has commenced, continues to be repeated at longer or shorter intervals till the death of the patient; sometimes, however, the vomiting ceases a day or two before death. In cases which terminate in recovery, the vomiting usually ceases after having been present a few hours only, or from twenty-four to forty-eight hours. The matters vomited consist, at first, usually, of the fluids that have been taken into the stomach; they then become yellowish or greenish, and in patients who recover, they do not generally present any other appearances. In cases, however, which are to terminate in death, these vomitings soon give way to the well known and fatal *black vomit.* This peculiar and striking symptom sometimes commences thirty-six or forty-eight hours before death; but more commonly not till the last day of life.[1] Louis and Trousseau's particular description of the appearances of the matter of black vomit, as found in the stomach and intestines, will be given in the chapter on the *post-mortem* phenomena of the disease. It is generally described as resembling coffee-grounds. Dr. Rush made a distinction, however, between this kind of fluid and the true black vomit; I suppose that the former was only the early stage of the latter. Dr. Lewis, of Mobile, gives the following account of the gastric symptoms. "As a general rule, there are far less vomiting and irritability of stomach during the first stage of yellow than that of bilious fever. During the stage of calm, a mucus, containing little flocculent masses, resembling *bees' wings*, is sometimes vomited. If bile is ejected, it may be set down not only as an exception but a favorable indication. The black vomit which takes place in the collapse stage is of various consistence and appearance. The little

[1] Louis on Yellow Fever, p. 217.

masses, which have been likened to *bees' wings*, occasionally deepen, so that, by the time the disease arrives at the collapse stage, it assumes the appearance of a thick black mass. The vomit is more generally thin and black, with a coffee-ground sediment; this is usually *pumped up*, suddenly, and without previous warning; the patient complains of its being sour, and so very acrid as to scald the throat. Black vomit, in a few instances, made its appearance on the night of the second day after the attack; these were exceptions, the fourth and fifth day being the most usual; many cases terminated fatally in which this symptom was wanting."[1] Blood but slightly changed is sometimes vomited. The easy, sudden, *pumping* character of the act of vomiting, in these cases, mentioned by Dr. Lewis, is spoken of by other observers. Several patients, says Louis, appeared to vomit without effort, the basin being placed on the edge of the bed, and their heads supported on their hands. Dr. Lewis, again, in his account of the treatment of yellow fever, remarks incidentally that there are less nausea and retching than in bilious fever; and that "the stomach is frequently disgorged without any other symptom than a slight tremulous curl of the upper lip, and a consciousness, on the part of the patient, that his stomach is in a rebellious mood."[2] Dr. Rush says: "The contents of the stomach were sometimes thrown up with a convulsive motion, that propelled them in a stream to a great distance, and in some instances all over the clothes of the bystanders."

Sec. IV.—*Bowels; Abdomen; Epigastrium.* The bowels are generally costive; at least there is rarely any tendency to diarrhœa. The only striking peculiarity in the character of the discharges consists in their brownish or black color. This symptom, like the black vomit, is found in a large proportion of the fatal cases; it occurs towards the close of the disease, but on an average a little earlier than the black vomit. It depends upon the same cause. It occurs also in cases which terminate in recovery, but in a much smaller proportion.[3]

Colicky pains occur in different parts of the abdomen in a certain proportion of cases, and during a limited period of time.

[1] N. O. Med. and Surg. Journ., vol. i. p. 299.
[2] Ibid., p. 420.
[3] Louis on Yellow Fever, p. 229, *et seq.*

They are sometimes occasioned by cathartic medicines; and, according to Louis, their commencement often coincides with the appearance of the brown and black stools. The shape and feel of the abdomen are nearly always natural, through the entire course of the disease.

Epigastric tenderness and distress are frequently but not constantly present. They occur at all periods of the disease. They are sometimes severe, but more generally moderate.[1] Dr. Lewis, of Mobile, and Dr. John Harrison, of New Orleans, both speak of an exquisite tenderness of the epigastrium, occurring chiefly towards the close of fatal cases. Dr. Harrison says: "The slightest attempt to press upon the parts is resisted by the patient with all the expressions of intense agony and horror." The same symptom is thus described by Dr. Rush: "The stomach, towards the close of the disease, was affected with a burning or spasmodic pain of the most distressing nature. It produced, in some cases, great anguish of body and mind. In others, it produced cries and shrieks, which were often heard on the opposite sides of the streets to where the patient lay."[2] Bally, and many others, mention the same symptoms.[3] According to Dr. Rush, flatulence of the stomach is a very constant and in many cases a very distressing symptom.

Sec. V.—*Urine.* The urine seems to be, generally, but slightly or not at all changed; at any rate, its alterations are accidental, and in no way characteristic of the disease. In a certain proportion of cases, precisely how large, I am unable to say, the renal secretion is wholly suspended. This is more frequent in fatal cases than in others, although it is not entirely confined to them.[4] Bally says that, in the third stage of the disease, the urine is very various in its appearance; sometimes yellow, sometimes red or bloody, sometimes brown, black, fetid, and so on.[5]

[1] Louis on Yellow Fever, p. 212, *et seq.*
[2] Rush's Med. Inq., vol. iii. p. 66.
[3] Du Typhus d'Amerique. Par Vr. Bally, p. 217.
[4] Louis on Yellow Fever, p. 235, *et seq.*
[5] Du Typhus d'Amerique. Par Vr. Bally, p. 244.

## ARTICLE III.

### CEREBRO-SPINAL, OR NERVOUS SYMPTOMS.

SEC. I.—*Headache, and other local pains.* Pain in the head is almost invariably present; and it is nearly always the first, or one of the first signs of the formal access of the disease. It is sometimes slight and at others moderate; but more generally, it is acute and violent. It is frequently felt through the temples and eyeballs. In a few cases it continues through the whole course of the disease, but in most instances it subsides in the course of two or three days. Pains in the back, loins, and limbs are equally constant and equally severe; occurring usually with the headache, or immediately following it, and subsiding in most cases with the latter. In some instances there are violent pains in the calves of the legs. Dr. Rush says: "The back suffered very much in this disease. The stoutest men complained and even groaned under it. The sympathy of friends with the distresses of the sick extended to a small part of their misery, when it did not include their sufferings from pain. One of the dearest friends I ever lost by death declared, in the height of her illness, that no one knew the pains of a yellow fever, but those who felt them."[1] Bally speaks particularly of the atrocious pain in the small of the back, which accompanies the first stage of the disease as the shadow follows the substance.[2] Dr. Lewis says that females suffer very little from pain in the head, while it is usually very severe in the back and hips; and that some mothers complain of these pains as worse than those of parturition. In addition to these acute local pains, which are mostly confined to the early period of the disease, the subsequent stages of many cases are marked by an indefinite feeling of extreme restlessness, wretchedness, and distress, often manifesting itself in fits or paroxysms, with longer or shorter intervals of comparative ease. Dr. Lewis, in reporting a fatal case, has the following: "Being asked why he was so restless, he replies that he is not restless, neither does he feel very sick; at the same time, in a slow, methodical manner, somewhat peculiar to this disease, he

[1] Rush's Med. Inq., vol. iii. p. 66.
[2] Du Typhus d'Amerique. Par Vr. Bally, p. 225.

removes the pillow to the other side of the bed, and places his head upon it, with the same care and caution as though it were a piece of glass. After a few minutes' conversation, the same preparations are being duly made for a change of position."[1] This paroxysmal restlessness attends the second and third stages of the disease, and constitutes one of its most constant and striking features. "Jactitation," says Dr. Gillkrest, "is of more frequent occurrence, and more severe in degree, than in any other disease, spasmodic cholera not excepted; the patient tosses his head and limbs about incessantly, unable to procure sleep in any position, or relief from the feeling of distress by which he is oppressed."[2]

Dizziness and giddiness are rarely mentioned by writers on yellow fever.

SEC. II.—*State of the Mind.* Delirium is rarely present, excepting for a short period, varying from a few hours to a day or two preceding death; it is very rarely wild and violent, and in many cases the mind remains clear quite to the close of life. "In no other grave malady," says Bally, "do the intellectual faculties maintain themselves with such entire integrity as in this; it is a singular phenomenon—that of the presence of mind preserved to the last instant of life."[3]

Dr. Barrington says there is often an inclination to sing; Dr. Lewis says the delirium consists in joking, singing, or idle *chit-chat;* and Dr. Harrison speaks of the little tricks of the patients, the kind of perverse pleasure which they manifest in thwarting the designs of their nurses and physicians, and their great delight at the success of their schemes, as characteristic rather of a species of insanity, than febrile delirium.

The kind of stolid indifference of patients in this disease has often been noticed. The editors of the *New Orleans Medical Journal* say: "It is remarkable to witness the indifference with which the victims of yellow fever in the Charity Hospital seem to view death. The large congregation of sick and dying seems to render them familiar with his face, and to rob him of more than half his terrors. After entering the hospital, and witnessing the dying struggles of some half dozen or a dozen fellow-sufferers,

[1] N. O. Med. and Surg. Journ., vol. i. p. 296.
[2] Cyc. Prac. Med., vol. ii. p. 270.
[3] Du Typhus d'Amerique. Par Vr. Bally, p. 211.

they meet their fate with composure, and quietly resign a life which, perhaps, to many of them, had presented naught but a varied scene of toil and care."[1] Dr. Rush, and Dr. Lewis, of Mobile, speak of occasional cases, not attended with delirium, in which the patients after recovery retain no recollection of what took place during their illness.

Coma is an uncommon symptom; but sometimes grave cases are marked by different degrees of drowsiness and stupor. The sleep is generally disturbed, and the patients often harassed by distressing dreams.

SEC. III.—*Physiognomy.* The appearance of the face, and the expression of the countenance, have always been particularly noticed by observers of yellow fever. Dr. Rush says: "Upon entering a sick room, where a patient was confined by this fever, the first thing that struck the eye of a physician was the countenance. It was as much unlike that which is exhibited in the common bilious fever, as the face of a wild is unlike the face of a mild domestic animal. The eyes were sad, watery, and so inflamed, in some cases, as to resemble two balls of fire. Sometimes, they had a most brilliant or ferocious appearance. The face was suffused with blood, or of a dusky color, and the whole countenance was downcast and clouded."[2] Mr. Pym says, it is impossible to describe the appearance of the face, but that those wishing to form an idea of it may see what he calls its fac-simile in the countenance of any person with a florid complexion, during the burning of spirit of wine and salt, in a dark room, as is practised in the game of Snap Dragon during the Christmas Gambols.[3] Dr. Lewis, of Mobile, says: "The physiognomy of the disease is striking and peculiar. I have not noticed, however, any of that wild, ferocious expression of eye and features which is spoken of by many writers. There is usually an attempt on the part of the patient to appear amiable and indifferent, seldom becoming peevish, or losing temper. The expression of which I am speaking is, in many cases, stamped upon the brow at an early period; and, 'once enthroned,' no effort of the patient can disturb its reign;—he may smile and laugh, but he cannot chase

[1] N. O. Med. and Surg. Journ., vol. i. p. 77.
[2] Rush's Med. Inq., vol. iii. p. 52. [3] Pym upon Bulam Fever, p. 5.

by a sigh, and in a quarter of an hour he was dead."[1] "I have known a man," says Dr. John Wilson, "in cases like these, ordered to do his duty, because the surgeon could not perceive *much the matter* with him; he continued to do his duty, after a fashion, for twenty-four hours, when the eruption of *black vomit* gave irresistible and mortifying evidence that the man was no impostor."[2] Spasmodic contractions of the muscles are of rare occurrence; excepting, however, those of the diaphragm, constituting hiccough. This is a frequent and very sure precursor of death.

The senses are generally free from any considerable disturbance. Slight intolerance of light is not unfrequently present. The hearing is unimpaired, and there is not often any ringing in the ears.

## ARTICLE IV.

### MISCELLANEOUS SYMPTOMS.

Sec. I.—*Color of the Skin.* Yellowness of the surface of the body is almost always present in fatal cases; occasionally it is wanting. Sometimes it appears early in the disease, but in most instances not till about the middle period, or later. The yellowness is often deeper on the chest than upon other parts of the body, and is frequently preceded by a more or less vivid redness and injection of the integuments. It usually shows itself first in the conjunctiva, and round the border of the chin, then extending to the chest, and afterwards over the body. In mild cases, and in those terminating in recovery, this symptom is very frequently absent. Dr. Bancroft says: "The yellowness is sometimes of a dingy or brownish hue, sometimes of a pale lemon, and at others of a full orange color."[3] Dr. Gillkrest says the yellowness may be partial or general, and may vary from the light lemon color to deep ochre yellow.[4] Dr. John Wilson says the discoloration of the skin differs in the two forms of the disease—the *inflammatory* and the *congestive*. "In the former, the skin is yellow, of different shades in different instances. Sometimes it is light, sometimes dark; sometimes it is of the color

[1] Louis on Yellow Fever, p. 170.
[2] Memoirs of the West Indian Fever, p. 15.
[3] Bancroft's Essay, p. 34.
[4] Cyc. Prac. Med., vol. ii. p. 273.

of an unripe lime, sometimes of a mellow orange; varying constantly, and being scarcely the same, in every respect, in any two cases: still, it is yellow, and would be instantly pronounced so by all observers; though in endeavoring to describe its exact tinge different words would be employed by different persons, sometimes inappropriate ones, and erroneous opinions would thence be formed. * * * In the congestive form, the skin is *discolored*, but does not become yellow. Its color is not like that of an icteric patient; it may rather be called petechial, as it resembles though it is not exactly like the skin of persons in the last stage of what is called putrid fever. From the first, the skin loses its proper lustre. It becomes blanched, or lurid; and as the disease advances, livid and black patches of various sizes are observed on the breast, back, hips, scrotum, and extremities. They pervade the surface, but are most numerous generally on the trunk. About their margins there is a yellowish or greenish hue, either of them indistinct, and what is called dirty. It is difficult to describe the aspect of the skin accurately and intelligibly; but by comparing it with a familiar object which it very closely resembles, a pretty correct notion of its peculiarities will be obtained. When yellow leather gloves are worn on horseback, in rainy weather, and the glove of the bridle hand is thoroughly wet, the palm part of it exhibits a very just likeness of what I have attempted to delineate—turbid white, and livid or black, intermixed with imperfect margins of yellow and green, or a hue in which yellow and green are blended, and it is difficult to say which predominates. This appearance of the skin in the congestive form, and the yellowness which I have appropriated to the inflammatory, I am persuaded, are characteristic of each respectively; but I am not from my experience justified in saying they are so absolutely, and without any exception."[1]

Sec. II.—*Hemorrhages.* Nearly all writers upon yellow fever speak of the frequency of hemorrhages from different parts of the body. Dr. Rush, after mentioning the occasional occurrence of bleeding from the nose, and from the uterus, in the early period of the fever, says: "As the disease advanced the discharges of blood became more universal. They occurred from the gums,

[1] Memoirs of the West Indian Fever, p. 22.

ears, stomach, bowels, and urinary passages. Drops of blood issued from the inner canthus of the left eye of Mr. Josiah Coates. Dr. Woodhouse attended a lady who bled from the holes in her ears, which had been made by ear-rings. Many bled from the orifices which had been made by bleeding, several days after they appeared to have been healed. These last hemorrhages were very troublesome, and in some cases precipitated death."[1] Similar bleedings are spoken of by other writers, from blistered surfaces, from the scrotum, from the uterus, from mosquito-bites, from leech-bites, and so on. They take place more frequently from the gums and tongue than from any other part of the body; and there is good reason for believing that these last are occasioned, in part at least, by the action of mercurials. Hemorrhages are more common in the latter stages of grave cases, than under other circumstances; and they seem to be more general in some seasons and places than others. By many pathologists, the matter of black vomit, and of the black stools, is considered to be the result of a true hemorrhage from the gastro-intestinal mucous surface.

SEC. III.—*Chest.* The symptoms connected with the lungs are quite unimportant and accidental. There is no cough, and there are no morbid rhonchi. The breathing in the late stages of grave and fatal cases is not unfrequently more or less deep, and sighing. I do not know that the action of the heart has been particularly studied.

[1] Rush's Med. Inq., vol. iii. p 57.

# CHAPTER III.

## ANATOMICAL LESIONS.

### ARTICLE I.

#### LESIONS OF THE LUNGS, HEART, AND BLOOD.

SEC. I.—*Lungs.* The condition of these organs, so far as I know, has been particularly and carefully studied only by Louis and Trousseau; and in fifteen cases they found them the seat of lesions which seem to have been very rarely met with in any other disease. These lesions consisted of black spots of from two to five lines in diameter, or of masses of the same color more or less impermeable to the air. The spots were found in nine subjects. In a few cases they were of a crimson hue, but generally they were brown or black. They were more or less crowded together, occupying a space of variable extent on the surface or in the interior of the lung; in some cases, they were found only in the lower lobe. The density of the tissue which was the seat of them was not manifestly increased, except in two cases; this increase of density was evidently the result of an effusion of blood, more or less intimately combined with the pulmonary tissue. "The black or blackish masses existed in six individuals; their consistence was greater or less; they contained no air; they had not the granulated aspect of hepatized lung; they presented but slight traces of organization, so that merely some cellular fibres irregularly disposed could be distinguished in them. Usually, they could be easily broken down; in some cases, also, they yielded by pressure the blood of which they were almost entirely composed, and the pulmonary parenchyma remained apparently of its natural consistence. In one case it was impossible to remove the blood by a gradual and moderate pressure, and here the tumor or mass was as large as the fist, had more cohesion than the parts in the second degree of pneumonia, and

less than the parts in the state which the illustrious Laennec has designated as pulmonary apoplexy. The same was true in another subject, in whose lungs were found from twenty-five to thirty tumors of this same character, though of a little different aspect, and somewhat resembling the thyroid gland. Their structure was apparently homogeneous, quite friable, and as in the other cases, there was no line of demarcation between them and the pulmonary tissue." I do not know whether it was this lesion of the lungs that was noticed by Arejula at Cadiz in 1800. He says: "On opening the cavity of the thorax, the lungs appeared *speckled with black and gangrenous spots*, which were particularly observed in those bodies in which the disease had assumed the most malignant form.[1] Mr. M'Colme says: "The lungs were often blackish next the pleura, and interspersed in many places with large livid spots."[2] Dr. Devèze seems to have studied the anatomical lesions of yellow fever, during the Philadelphia epidemic of 1793, with more zeal and carefulness than any other physician. He does not state the number of his autopsies, but he reports in detail eight examinations which he made at the Bush Hill Hospital. The lungs, he says, were sometimes found healthy; but more frequently they were flabby, *covered with black spots*, engorged with blood of the same color, and so on. He quotes other observers who had noticed *black and gangrenous spots* on the surface of the lungs.[3] O'Halloran did not notice any special alteration of these organs. Louis and Trousseau found, in several cases, a livid color of the air-passages, more or less vivid, occupying the mucous and the sub-mucous cellular tissue. Other lesions of the lungs and pleuræ are of very rare occurrence.[4]

SEC. II.—*Heart.* Louis and Trousseau found the heart soft or flabby, or both soft and flabby, in a considerable proportion of cases. Other changes in this organ, and in the aorta, are accidental merely, and such as are frequently found after death from acute disease. Devèze found the heart flabby, pale, and very soft.[5]

[1] Reports, etc., by Sir J. Fellowes, p. 68. [2] Hunter's Dis. of Army, p. 161.
[3] Traité de la Fièvre Jaune. Par Jean Devèze, p. 62.
[4] Louis on Yellow Fever, p. 63, *et seq.* [5] Rush's Med. Inq., vol. iii. p. 92.

SEC. III.—*Blood.* The blood found in the cavities of the heart, and in the large vessels, after death, seems to be very generally changed from its natural condition. This change was noticed by the older observers; and it has been more particularly studied in our own time. Dr. Physick and Dr. Cathrall say: "The blood in the heart and veins is fluid, similar in its consistence to the blood of persons who have been hanged, or destroyed by electricity.[1] Hillary speaks particularly and repeatedly of the state of the blood. "Even at the beginning of the disease," he says, "it is often of an exceeding florid red color, much rarefied and thin, and without the least appearance of siziness; and the crassamentum, when it has stood till it is cold, will scarce cohere, but fluctuates."[2] Louis and Trousseau found the blood generally either liquid only, or liquid and clotted; the clots being black, or yellow, and fibrinous. Dr. Nott, of Mobile, gives the following interesting account of the blood in the cases examined by him, in 1843 and 1844. "This was found dark and fluid in every case where the bodies were opened. Minute observations were not made, in all the cases, but in about one-half, the blood was collected by thrusting a trocar into the right auricle, and drawing it off into clean quinine bottles. It was so fluid, and was accumulated in such quantity in the auricle and veins connected with it, that, ten or twelve hours after death, it would run freely through the canula, to the amount of a pint or more. When set aside, it coagulated at intervals, varying from fifteen or twenty minutes, to thirty-six hours; the clots were soft, grumous, easily broken down, showing a great deficiency of fibrine, and corresponding with Andral's description of the blood in the other pyrexiæ. In one case, it did not coagulate at all, but presented a true state of dissolution."[3] Dr. Harrison says it requires a much longer time for the blood to coagulate than in other diseases, and that the coagulum is large and soft; he adds, that it rarely presents the buffy coat when drawn from the arm, and that he has never seen it cupped.[4]

[1] Rush's Med. Inq., vol. iii. p. 92.
[2] Rush's Hillary, p. 108.
[3] Am. Journ. Med. Sci., April, 1845.
[4] N. O. Med. and Surg. Journ., vol. ii. p. 140.

## ARTICLE II.

### LESIONS OF THE CEREBRO-SPINAL APPARATUS.

There are no alterations of this apparatus, excepting such as are frequently found after death from other acute diseases. These are moderate effusions of serum in the sub-arachnoid tissue and into the cavities of the brain; a more or less red, or violet, or lilac color of the cortical substance, and occasional slight injection of the medullary portion of the brain.

## ARTICLE III.

### LESIONS OF THE ABDOMINAL ORGANS.

SEC. I.—*Stomach.* The mucous membrane of the stomach is more or less altered in a pretty large proportion of cases. Louis and Trousseau found it of natural thickness, consistency, and aspect, with the exception only of slight changes of color in five, of twenty-three cases; in the remainder it presented evident traces of previous inflammation. Its *color* was quite natural in only three cases; in several it was more or less deeply red, sometimes over its whole surface, and at others only over circumscribed portions; in eight cases, instead of a red color, there was an orange, or a slight rose tint, or a color of onion parings, varying in extent; in two cases there was a ruddy or bistre hue, and in two others the membrane was greenish or yellowish. The *thickness* of the membrane was natural in half the cases; in the other half the thickness was increased; in some universally, and in others partially. Its *consistence* was natural in only two subjects, in all the rest it was more or less diminished. The softening was general but moderate in five; partial and but rarely to a remarkable degree in the others, so that in no region, not even in the great *cul-de-sac*, was the membrane reduced to the consistence of mucus. Well marked and more or less extensive *mamellonation* was found in two-thirds of the subjects; and it is important to remark that this lesion was always accompanied by thickening, or softening of the membrane, or by both, and by alterations of its color. Dr. Ashbel Smith has published a history of the appearance of the abdominal organs in seven cases of yellow fever,

occurring in Galveston, Texas, in 1839. He found the mucous membrane of the stomach of a whitish pearl color, much thickened and softened. In four cases, these lesions were limited to certain portions of the membrane, while the remaining portion, in the cardiac extremity, was the seat of a very intense, uniform, red injection, but was neither thickened nor softened.[1] Subsequent observations, by other physicians, have led to the same general results, in regard to the condition of the stomach. Dr. Josiah C. Nott, of Mobile, in sixteen cases, examined in 1843 and 1844, found the mucous coat of the stomach free from any appreciable change in seven; in the remaining nine it was more or less reddened, softened, thickened, and mamellonated.[2]

The *contents* of the stomach are thus minutely and particularly described by Louis. In four subjects, the stomach contained only a small quantity of flocculent mucus, or a little grayish, yellowish, or dark-colored liquid; in all the others, eighteen in number, the contents of the stomach were red, more or less inclining to black. This red or black matter varied in quantity, from four to twenty ounces; and its quantity was in proportion to the depth of the red color; the mean quantity where the color was bright red being nine ounces, and fourteen ounces where it was entirely black. The consistence of the red and the black matter was about the same; in some it was quite liquid, in others it was like porridge. It separated on standing into two portions; the upper more liquid than the lower, and of a bistre color; the lower less abundant, and formed as it were of blackish parcels.[3] This matter of black vomit was formerly supposed to be derived principally from the liver, and to consist of vitiated bile, mixed with the fluids of the stomach. Dr. Rush says that he at one time believed this matter to consist of vitiated bile, but that subsequent dissections by Dr. Stewart and Dr. Physick, convinced him that it was derived from the stomach; although I find in the report of the dissections, made by Dr. Physick and Dr. Cathrall, and quoted by Dr. Rush, the black liquor found in the stomach and intestines referred to an altered secretion from the liver. This opinion is now, I think, generally if not universally abandoned; and it seems to me quite clear that the matter of black

[1] Amer. Journ. Med. Sci., Feb. 1840.
[2] Ibid., April, 1845.
[3] Louis on Yellow Fever, p. 79, *et seq.*

vomit *consists of blood, mixed with the fluid secretions of the stomach, and derived directly from the mucous membrane.* Dr. Nott, and Dr. P. H. Lewis, of Mobile, have made some interesting experiments for the purpose of ascertaining the nature of this substance. Dr. Nott believes it to consist of blood, exhaled in its natural state from the capillaries of the stomach, intestines, and even the bladder, and changed black by the secretions with which it comes in contact; this chemical change being produced by one or more acids. He says that the matter of black vomit is always acid, turning litmus paper red; and he supposes that the acrid property of the liquid may depend upon the presence of these acids. Dr. Nott found, further, that the matter of black vomit can be very exactly imitated, by adding to a few drachms of blood four or five drops of muriatic acid, and a little gum water, or flax-seed tea, to represent the mucus of the stomach. No one can distinguish, he says, the artificial from the natural black vomit; although he admits that the small coffee-grounds coagula are more difficult to imitate. A very small quantity of blood, he thinks, oozing gradually in a minutely divided form, and mingling slowly with the secretions of the mucous membrane of the stomach and bowels, will make a large quantity of black vomit.[1] The opinion that the coloring matter of black vomit consists of blood, is strengthened by the fact that, in some instances, pure blood is found in the stomach. It is probable that, as a general rule, this matter is derived exclusively from the mucous surface of the stomach, and not from that of the intestines; although the observations of Louis lead to the conclusion that it may sometimes be furnished by the latter. It is important that a single additional remark should be made here. We have no right to assume that the appreciable inflammatory lesions of the stomach are the essential cause and condition of the presence of the matter of black vomit; and this for the obvious reason that the latter is not unfrequently found where the former do not exist. All that we can do in the present state of our knowledge is to refer the productions of this substance to some special but unascertained pathological action or condition of the mucous membrane of the stomach, or of the fluids of the body; or, as is more probably true, of both; the inflammatory lesions of the

[1] Amer. Journ. Med. Sci., April, 1845.

gastric mucous membrane being also one of the results and complications of this same action or condition.[1]

As to the *nature* of these lesions of the stomach, it seems to me there can be no reasonable doubt. Where they are well marked, and especially where the membrane is reddened, softened, and mamellonated, we are obliged to consider them the result of inflammation. If we refuse to do this, merely because some of the ordinary phenomena of simple acute gastritis are wanting, there is at once an end to all rational or positive conclusions. At the same time it must be admitted that the inflammation of the gastric mucous surface is a peculiar or specific inflammation; it is in some way modified by the general disease; it derives from the latter some special and unknown element, which does not exist in other forms of gastritis, whether these latter are primary or secondary.

Dr. Ashbel Smith concludes from his observations, that the softened, thickened, and mamellonated condition of the membrane is always preceded by an intense sanguineous engorgement, differing in its nature from inflammation, and resulting in the production of the matter of black vomit, and the lesions of the membrane which it precedes.[2]

Ulceration is of very rare occurrence. In regard to the volume of the stomach there is nothing constant: sometimes it is contracted, sometimes distended, and at others natural.

SEC. II.—*Intestines.* The mucous membrane of the small intestines is, in a considerable number of cases, quite natural

[1] The true character and origin of the matter of black vomit were clearly stated a long time ago. Dr. Bancroft quotes Dr. Henry Warren, who wrote on the yellow fever of Barbadoes, in 1740. Dr. Warren says: "I ought here to observe, that the fatal black stools and vomitings are vulgarly supposed to be only large quantities of black bile or choler, which false notion seems to be owing to *that fixed unhappy prejudice that the fever is purely bilious.* But let any one only dip in a bit of white linen cloth, he will soon be undeceived, and convinced that scarce anything but mortified blood is then voided, for the cloth will appear tinged of a deep bloody red, or purple, of which I have made many experiments."—*Bancroft's Essay*, p. 28. Sir John Pringle, Dr. John Hunter, and Sir Gilbert Blane, amongst others, entertained similar views. Mr. Pym says he is convinced that the matter of black vomit is blood in a dissolved state, poured forth from the small vessels, abraded by the separation or disease of the villous coat, and acted upon by the gastric fluid.

[2] Amer. Journ. Med. Sci., Feb. 1840.

throughout its whole extent; or it is the seat only of slight and unimportant alterations. Its thickness and consistence are rarely changed; in a certain proportion of cases there are patches or sections of redness, mostly within a few feet of the cœcum. Redness, softening, and thickening of the lining of the large intestine are more frequent. Louis and Trousseau found universal softening in fourteen of twenty-three cases. The latter lesions are probably the result of inflammation.

The upper portion of the small intestine usually contains the same kind of reddish, brownish, or blackish matter that is found in the stomach; and the same substance is found also in the large intestine.[1] It is thicker and more consistent especially in the large intestine than it is in the stomach. Pure blood has occasionally, though rarely, been found both in the stomach and bowels. The volume of the intestines is not often altered.

Louis and Trousseau found the epidermis which lines the œsophagus perfect in only five cases; in all the others it was more or less completely destroyed.[2] Dr. Nott of Mobile thinks it probable that this destruction of the epidermis of the œsophagus depends upon the acid acridness of the matter of black vomit.[3]

Sec. III.—*Liver.* Since the publication of the researches of Louis and Trousseau upon the yellow fever of Gibraltar, in 1828, the attention of pathologists has been turned particularly to the condition of the liver in this disease; and the result of subsequent observations in regard to the state of this organ in periodical, or marsh fevers, has imparted to the subject new interest and importance. The following, I believe, is a full and fair summary of the present state of our knowledge in relation to this question.

Louis and Trousseau, in all the subjects examined by them at Gibraltar, found a very striking and uniform change *in the color* of the liver. They describe the liver as being sometimes of the color of *fresh butter;* sometimes of a *straw color;* sometimes of the color of *coffee and milk;* sometimes of a *yellowish gum color*, or a *mustard* color, and, finally, sometimes of an *orange* or *pistachio color.* "This discoloration," they say, "was not the

[1] Amer. Journ. of Med. Sci., Feb. 1840.
[2] Louis on Yellow Fever, p. 100, *et seq.*
[3] Nott on Path. of Yellow Fever.

same throughout the whole extent of the liver; more marked in the left than in the right lobe; it was also more uniform. In cases where the color was uniform in the left lobe, there was in the right lobe a mixture of gum yellow, orange, or red points, larger or smaller; or else we found in the right lobe a rose tint, which did not exist in the left lobe. The cases in which the color of the liver was formed by the mingling of different colored points were rare; and this disposition was somewhat remarkable in one of them, where the liver presented a mixture of yellow and green points. This change of color extended throughout the whole of the organ, in all but three cases; in these, it was limited to the left lobe, or to the left and a part of the right, the latter preserving its natural color throughout, or in its obtuse edge only."

"With the discoloration of the liver, are found a more or less marked paleness, and a diminished quantity of blood, so that wherever this appearance of the liver was well marked, the sections of it were dry, and of an arid appearance in the left lobe. This appearance reminded us at first of the greasy transformation of the liver, a transformation always accompanied by a softening, more or less marked. In the cases now under consideration, the cohesion of the liver was not at all diminished, even where the organ was of a clear coffee and milk color, or of a straw yellow, or of the color of sole leather."[1] The cohesion of the liver, and the resistance of its tissue to the knife, or to the hand, on attempting to break it, were increased in five cases, and diminished in five others.

The singular change in the color of the liver, thus particularly and specially studied by Louis and Trousseau, is regarded by the former as the *characteristic* anatomical lesion of yellow fever—the only lesion constantly found after death from this disease. Louis's conclusion, so far as his own facts are concerned, and he carries it no further, is legitimate; but these facts were not sufficiently numerous and various, finally and definitively to determine the question. These facts were gathered in a single locality, and during the same epidemic season; and although analogies drawn from some other forms of fever, and especially from typhoid, might seem to favor the probability, or in some degree to justify the conclusion that this lesion of the liver would prove to be *constant*

[1] Louis on Yellow Fever, p. 117, *et seq.*

and *characteristic*, still, such analogies are never to be trusted, and the settlement of the question must be referred to further and more extensive observations. But before giving the results of these observations, so far as they have yet been made, it may not be wholly without interest to notice some of the allusions to the condition of the liver made by the older writers upon yellow fever; from which it appears that this change of color had not entirely escaped their notice, although they generally describe the organ as *natural* or *congested, corrupted*, and so on. "Dr. Hume," says Dr. Rush, "in describing the yellow fever of Jamaica, informs us that, in several dead bodies which he opened, he found the liver enlarged and turbid with bile, and of a *pale yellow color.*"[1] Dr. Chisholm made five autopsies, in the yellow fever of the West Indies, towards the close of the last century, and he describes the liver as being "*of a color nearly approaching to buff, or a mixture of yellow and that of ashes.*"[2] Arejula, in his account of the yellow fever of Cadiz, in 1800, says: "In many subjects the liver was enlarged, and its consistence so much altered as to appear as if it had been macerated; and this organ, as well as others, was found tinged of a different color, approaching to the hue between yellow and black."[3] Dr. Rand and Dr. Warren, in their account of an autopsy made in Boston in 1798, describe the liver as appearing to be much inflamed, both on its convex and concave surface; its substance much indurated, and, on cutting, resembling in color *a boiled liver*. Mr. John M'Colme, whom John Hunter calls a man of veracity and observation, and who served as a regimental surgeon in the West Indies, in the years 1741 and 1742, has given an account, in a letter to Sir John Pringle, of the appearances on dissection in the bodies of twenty-three officers and soldiers, who died with yellow fever. He begins his letter in these words: "*In all the cases*, the liver was changed in part, and sometimes almost the whole—to be *more pale and hard* than natural; and, in such parts, there was a *less proportion of blood* than in those of a more natural color."[4]

Dr. Burnett reports a case in which the substance of the liver was of a *yellow* color; and he quotes from Mr. Whitmarsh the

[1] Rush's Med. Inq., vol. iii. p. 91.
[2] Chisholm's Essay, vol. i. p. 183.
[3] Reports, etc. by Sir J. Fellowes, p. 68.
[4] Hunter's Dis. of Army, p. 60.

account of two cases of the Gibraltar fever of 1813, in which the liver was found of an *ash* color.[1]

Mr. Doughty has published, quite in detail, the appearances on dissection in eight cases, examined at Cadiz, in 1810. In some, the liver is called natural; in some, dark and engorged; in one, the color is described as between a light and dark yellow; and in one, as a light yellow.[2] Dr. Hume made some examinations before the middle of the last century. He says: "The liver which is naturally of a dark red color, frequently appears on dissection in the yellow fever to be *pale and yellow.*"[3]

The observations of O'Halloran upon this point, made in 1821, are very interesting. In his first reported case, the liver is described as *extremely yellow* externally, *hard and dense* when cut into; the flow of blood inconsiderable; in the second, the liver was *yellow, hard,* and *deficient in blood;* in the third, *hard and yellow, without blood;* in the fourth, *thick, hard, compacted, dry and pale, with no flow of blood when cut into, and crumbling between the fingers;* in the fifth, *pale externally, hard to the feel, internally destitute of blood, and gritty, so as to be easily crumbled into small pieces;* in the sixth, *large and hard, crumbling between the fingers;* in the eighth, *pale yellow externally, internally hard, destitute of blood, and easily broken into small pieces;* and in the ninth, *considerably enlarged, hard and yellow externally, internally destitute of blood, and easily crumbled.* In three cases, it is described as either healthy, or inflamed. He quotes a letter from Dr. Salvador Campany, who says: "The liver presented a saffron color, sometimes with obscure stains in its concave part."[4]

Dr. Nott, of Mobile, in his interesting paper on the Pathology of Yellow Fever, describes the liver as it appeared in sixteen cases of the disease. Of eight cases examined during the epidemic of 1843, the livers in two only corresponded with the description of Louis, being pale, and when torn resembling very closely *gingerbread,* or *new leather;* in the six others, the liver was of a *dark blue* or a *dark chocolate color,* presenting different shades, and excessively engorged with blood. Of eight cases examined in 1844, the liver in four corresponded with the de-

[1] Burnett, p. 306.
[2] Doughty, p. 145.
[3] Currie's Dis. of America, p. 57.
[4] O'Halloran on Yellow Fever, p. 186, *et seq.*

scription of Louis; in two the color was a *dark olive*, and in two there was no alteration. Dr. Nott says, further, that he has twice met with the straw-colored liver after death from other diseases.[1]

Dr. John Harrison, in his *Remarks on the Yellow Fever of New Orleans*, says: "The liver sometimes contains less blood than we usually find in the viscus, and, in those cases, it is paler and drier than usual. At other times, however, it is engorged with blood, and bleeds freely when cut; but these appearances it is subject to in common with all the organs, and the existence of one or the other appears to depend much upon the condition of the patient at the time of the attack, and the treatment he has undergone. In cases where the lancet has been used freely, we shall generally find a *pale yellow liver*."[2] The interests of science not only justify here, as in all similar circumstances, but they demand a single criticism. Where *results merely* are given—and these only in general terms—where cases of disease are observed in a hospital, by extensive practitioners, constantly and busily occupied with their private practice, and where these cases are not reported in detail, there must inevitably occur, and this not unfrequently, errors of diagnosis. That this error was sometimes committed in the Charity Hospital, no one can for a moment doubt who reads the following statement by Dr. Harrison. He says: "*In some cases of a low typhoid type*, in which there existed before death *a low nervous delirium*, we found, sometimes ulceration, and at others hypertrophy and softening of Peyer's glands."[3] These were unquestionably cases of true typhoid fever; such at any rate is the conclusion which, in the absence of any detailed histories of the cases themselves, we are justified in adopting; and if, under such circumstances, cases of typhoid fever could be confounded with those of yellow fever, how much more readily might this happen with *the more closely allied forms of periodical fever —bilious remittent, and congestive.* In the Gibraltar epidemic of 1828, a case was reported to Louis, by Mr. Frazer, *as one of yellow fever*, where the yellow liver was wanting, and in which there was ulceration of Peyer's glands. A careful study of the case shows manifestly that there had been an error of diagnosis,

[1] Amer. Journ. Med. Sci., April, 1845.

[2] N. O. Med. and Surg. Journ., vol. ii. p. 138.

[3] Ibid., p. 139.

and that the disease was typhoid and not yellow fever.[1] In regard to the *causes* and *nature* of this peculiar condition of the liver, it is quite idle to speculate. We can only call it *peculiar*, or *special*, and plainly and frankly admit that we know little more about it. Clearly enough, it is neither inflammatory nor congestive, and this is about as far as we can go. It constitutes one of the pathological elements—a very common though not a constant one—in a specific disease, the result of a specific cause, the nature and action of which are yet hidden in absolute darkness.

Dr. Richard D. Arnold, of Savannah, has reported a case of yellow fever in the *American Journal of the Medical Sciences*, for October, 1842. The liver was *pale* and *ash-colored* on its entire surface, and throughout its whole structure; and it was very destitute of blood. Dr. Arnold says: "Dr. Waring, in 1827, pointed out to me, in the dead body, as *the peculiar characteristics* of yellow fever, the *pale appearance of the liver, its deficiency of blood*, amounting to a comparative dryness, and the entire absence of all biliary secretion. Dr. Barrington, in his account of yellow fever on board United States vessels in and near the Gulf of Mexico, in 1828, 1829, and 1830, speaks of the liver in two cases as of a *light color*.[2] Dr. Ashbel Smith made seven autopsies at Galveston, Texas, in 1839. In three cases, the liver was of a very light drab color, externally and internally, and destitute of blood; in one, of a dark claret color, and congested with blood; in the others, of its usual appearance, and containing a moderate quantity of blood. In all cases, there appeared to be a suspension of the biliary secretion; no bile could be squeezed from the substance of the liver.[3] M. Catel says there were *one hundred and fifty* yellow-fever autopsies, at the Hospital of St. Pierre, in Martinique, between October, 1838, and September, 1839; and that the liver was *always* deprived of its color—*décoloré*—and yellow; and the gall-bladder generally empty.[4]

SEC. IV.—*Gall-bladder, and its contents.* Most of the older observers, and some few amongst the moderns, describe the contents of the gall-bladder as nearly or quite natural. Thus, Dr.

[1] Louis on Yellow Fever, p. 124. [2] Amer. Journ. Med. Sci., Aug. 1833.
[3] Ibid., Feb. 1840. [4] Rapport, &c. Par N. Chervin, p. 12.

Physick and Dr. Cathrall, in their account of "several dissections," made in Philadelphia, in 1793, say that the bile in the gall-bladder was quite of its natural color, though very viscid; and Dr. Harrison, in his account of the yellow fever of New Orleans says that the gall-bladder in most cases contains its usual quantity of bile, which is to all appearances healthy, although sometimes it is greatly inspissated.[1] The weight of evidence is, however, quite the other way. Louis says: "It is fair to presume on account of the anæmic state of the liver, in individuals dying of the yellow fever of Gibraltar, that the secretion of bile was not abundant in the course of that disease. Very little of it was found in the stomach and small intestines of the subjects whom we have opened; and in the same cases, the gall-bladder contained less bile than is found in the victims of other acute diseases; and especially less than in those who have died of typhoid fever, where the bile is abundant, of a pale color, and of little consistence—characters the opposite of those found in the cases we are now studying, *in all of which*, with two apparent exceptions, *the bile was thick, scanty, and of a dark green color.*"[2] Dr. Arnold says: "In all cases that I have ever examined, with the exception of viscid bile in the gall-bladder, in vain did I ever look for the slightest trace of bile in the dead body. The same is true of the excretions during life. Perhaps there may be bile in the very beginning of the attack, before a physician is called; but in every case that has ever come under my notice, that has terminated in black vomit, the absence of bile from the excretions has been the distinctive characteristic of the disease."[3] Dr. Nott, of Mobile, found the gall-bladder in fifteen of sixteen cases containing bile, varying in quantity from half an ounce to four ounces; of a pale-green, olive, or black color; and its consistence ranging from that of water to that of tar. He adds: "The secretion of bile in this disease is almost invariably suppressed early; in severe cases, it is rarely vomited after the second day; and I believe I have never seen it after the third day, when they were fatal, except in one or two very protracted cases."[4] Dr. Cooke, in his account of the yellow fever of Opelousas, speaks particularly of this arrest of the biliary secretion. Of all the phenomena of the

[1] N. O. Med. and Surg. Journ., vol. ii. p. 138.
[2] Louis on Yellow Fever, p. 140. [3] Amer. Journ. Med. Sci., Oct. 1841.
[4] Ibid., April, 1845.

disease, he considers this the most constant and characteristic. Mr. John McColme, in the letter already quoted, says: "The bile in the gall-bladder was of a deeper color, much thicker and more viscous than common; small in quantity, never exceeding an ounce; oftener from half an ounce to six drachms."[1] Dr. Robert Jackson says: "The contents of the gall-bladder are changed, in almost every case of the concentrated yellow fever, into a thick black fluid, resembling tar or molasses."[2] Dr. Devèze found the gall-bladder generally empty, but sometimes containing a small quantity of bile.[3] In a few instances, the gall-bladder contains other fluids, or blood.

SEC. V.—*Spleen; mesenteric glands; urinary organs.* No one of these organs is the seat of any frequent or important alterations. Louis and Trousseau found the spleen somewhat softened in eight cases; but in half the subjects, it was entirely natural.

## ARTICLE IV.

### MISCELLANEOUS LESIONS.

SEC. I.—*Exterior of the body; muscles.* In most subjects, the surface of the body is generally yellow. *In three of the cases examined by Louis and Trousseau, this color was not present;* and when the yellowness was not well marked, it was more so on the trunk, and about the head, than on the limbs; and in some subjects, it was very slight over the whole extent of the limbs. Cadaverous muscular rigidity is generally strongly marked; and the muscles preserve their healthy firmness, color, and cohesion.

## ARTICLE V.

### GENERAL REMARKS.

SEC. I.—*Relation between Symptoms and Lesions.* It is quite clear, I think, that the febrile symptoms—the chills, the heat of the surface, the accelerated pulse, and so on—cannot with any propriety be attributed to local inflammations, in any part of the

[1] Hunter's Dis. of Army, p. 160.
[2] Jackson on Febrile Diseases, vol. i. p. 79.
[3] Traité de la Fièvre Jaune. Par Jean Devèze, p. 66.

body. In the first place, these inflammations, so far as we can ascertain from the lesions found after death, are sometimes absent; and, in the second place, we have good reasons for believing that the inflammations usually occur after the subsidence, or at least, after the partial subsidence of the febrile symptoms. Louis says the commencing coldness of the lower extremities usually coincides with the appearance of the black vomit, and probably depends upon this gastric hemorrhage.

There is no evidence of any special connection between the state of the tongue and that of the stomach. There can be no reasonable doubt, perhaps, that the vomiting in the latter stage, and near the close of the disease, is more or less dependent upon the lesions of the gastric mucous membrane, which have been described; but we shall be carrying our interpretation further than our facts will justify us in doing, if we attribute the vomiting, and the other gastric and epigastric symptoms, always and invariably, to the inflammation of this membrane. The grounds of this qualification are found in the fact already stated that, in a certain proportion of cases, attended like the rest by vomiting, the mucous membrane of the stomach presents no traces of previous inflammation. If it is alleged here, as it has been, that inflammation had existed, but that its results had disappeared with death; our reply is, that the allegation is wholly gratuitous; and that we have no right, in the absence of positive facts, to indulge in assertions which are necessarily more or less conjectural. In relation to the particular question before us, it is, at least in the actual condition of our knowledge, more philosophical to refer the vomiting, as we have referred the production of the matter itself of black vomit, partly at least, to some anterior and more specific morbid condition, the precise nature of which is yet wholly unknown. Similar remarks may be made in regard to the loss of appetite, the thirst, the epigastric distress, and the general restlessness, so common towards the close of fatal cases. None of the symptoms can be referred, with entire constancy or uniformity, to the appreciable lesions of the organs making up the pathological anatomy of the disease.

According to Louis, the colicky pains of the abdomen, which are present in a certain number of cases, often coincide in their appearance with the discharges of black matter from the bowels;

so that they are probably occasioned by the presence of this matter.

The yellow color and anemic condition of the liver do not reveal themselves by any characteristic symptoms during life. It is reasonable, however, to attribute the absence of bile from the gastro-intestinal discharges to the morbid condition of the liver.

I am not aware that the suppression of urine, which is occasionally met with, has been found connected with any appreciable alteration of the kidneys.

The headache which so constantly attends the early period of yellow fever, as well as the other local pains, must be regarded as purely nervous phenomena, in no way dependent upon any appreciable alteration of the cerebral, or the cerebro-spinal, apparatus; and the same thing is true of the delirium and coma which are occasionally present towards the close of the disease. These latter symptoms are as common in cases where the brain is free from any alteration as they are in cases where the lesions are found. For similar reasons, none of these symptoms can be referred directly to the inflammation of the stomach, or to any other of the local lesions.

It is very natural that we should refer the yellowness of the skin to the morbid condition of the liver, and perhaps this explanation of the phenomenon is more rational than any other. It is quite clear that, in most cases, and it may be in all, there is, early in the disease, a suspension of the functions of the liver, and it is a very reasonable conclusion that the two phenomena are connected. It is well to remember, however, that the yellowness of the surface is frequently preceded by a more or less intense sanguineous congestion of the skin, and that the discoloration may depend upon some modification in the condition of the blood, or the action of the cutaneous capillaries, or both, quite independent of the state of the liver. The tendency to hemorrhage depends also, probably, upon the altered state of the blood.

The hemorrhagic spots and masses in the tissue of the lungs do not indicate their presence by any symptom during life—a fact that furnishes us with another lesson, if any such were needed, of the danger of trusting, in any degree, to what we call analogies, or *à priori* probabilities, however reasonable and plausible these may seem to be.

There is no proof that the character of the pulse is dependent upon any appreciable morbid alteration of the heart.

SEC. II.—*Causes of Death.* The present seems to me as appropriate a place as any for a few remarks upon the causes of death. Keeping myself, as I have always endeavored to do in these interpretations, strictly within the authority of well-ascertained phenomena, what I have to say must necessarily be rather approximative and conjectural than positive in its character. Considering the rapidity with which the changes in the liver and in the mucous membrane of the stomach take place, it is not unreasonable to suppose that, in a certain number of cases, these changes, together with the hemorrhagic effusion, play a very important part in the destruction of the patient's life; they may perhaps, of themselves, be considered as adequate causes of this result. The relative agency and importance of each of these phenomena it would be an idle labor to attempt to ascertain. There are many cases, however, especially such as are attended with but slight lesions or with no appreciable lesions of the stomach, in which it seems to me more philosophical to look elsewhere for the causes of death; and in which, if our knowledge was sufficiently accurate and extensive, they would probably be found in the altered state of the blood, and in other immediate and remote effects of the unknown etiological poison of yellow fever upon the different tissues of the body. The analogies of many other diseases, especially such as are of a malignant or congestive character, like Asiatic cholera, scarlatina, typhus fever, and so on, are all in favor of this interpretation.

# CHAPTER IV.

## CAUSES.

In the multitudinous records of the history and literature of yellow fever, there is no portion so involved in interminable confusion and embroilment as that which relates to its causes. After as thorough and careful an examination as time and opportunity have enabled me to make, I shall now do what I can in endeavoring to render this subject as intelligible as its nature and present condition will admit, following the same general plan by which I have been guided in the preceding portions of my book.

Sec. I.—*Locality.* Amongst the most striking circumstances in connection with the etiology of yellow fever, are those of the geographical boundaries within which it is confined, and the more circumscribed localities in which it prevails. In the first place, the disease is very rarely met with south of the twentieth degree of south, or north of the fortieth degree of north latitude. The range of latitude, in which it prevails most extensively, lies between thirty-six or thirty-seven, and forty-one or forty-two degrees north, in Europe; and between ten and thirty-five degrees north, in America. In the second place, even within these limits, yellow-fever is much more frequent in the Western than it is in the Eastern hemisphere, and still further, it is much more common in certain portions of Europe and America than it is in Africa. In the third place, yellow fever is almost always confined to *commercial seaports;* although it is occasionally met with in the towns and cities in the neighborhood of the latter, situated in the interior of the country, or on the banks of navigable rivers. In the fourth place, yellow fever is very frequently strictly circumscribed within certain limited and well-defined portions of the locality, or the city, in which it prevails. These four facts in connection with this element of the etiology of the disease are well ascer-

tained; there is no doubt, that I am aware of, or difference of opinion in regard to them.

The places in Europe which have been most frequently and most extensively visited by this disease, are the seaports of the north coast of the Mediterranean, especially those of Spain. Dr. Gillkrest enumerates eighty-five towns or cities in the maritime provinces of Andalusia, Murcia, Valencia, and Catalonia, where yellow fever has been known to prevail. The most important of these are Cadiz, Gibraltar, Malaga, Carthagena, Alicante, and Barcelona, all situated on the sea-coast. Dr. Gillkrest says, further, that the disease is occasionally met with, to a limited extent, in some of the towns and cities at a considerable distance from the sea; amongst these, he mentions Cordova, situated on the Guadalquivir, seventy miles in a direct line from the coast; and Ronda, sixty miles north of Gibraltar. Similar facts are of frequent occurrence in the United States. The interior towns which are oftenest visited by yellow fever, are those situated above New Orleans, on the Mississippi River, especially Natchez and Vicksburg. In 1844, Woodville, a small inland town of Mississippi, fifteen miles in a direct line from the river, suffered severely from the disease; *as did also many isolated plantations in the surrounding country.*[1]

The principal seats of the disease, in America, are the towns and cities lying along the shores of the Atlantic Ocean, from Charleston, south; along those of the entire Gulf of Mexico, and of most of the West India Islands. The shores of this western Archipelago and Gulf, constitute the great and prolific hot-bed in which is constantly generated the unknown poison of the disease; they have been the crowded Necropolis of the successive swarms of adventurers and invaders, who have annually flocked thither from Europe and America, ever since their discovery. Chisholm says, in his dedication, that more than twelve thousand of his countrymen have perished within these islands in the short space of two years!

In connection with the localities, or the *habitat*, of yellow fever, it is important to notice that it frequently occurs and prevails extensively on shipboard. This has been so often witnessed as to render it quite certain that, in yellow-fever seasons, and places,

[1] N. O. Med. Journ., vol. i. p. 530.

the hold of a ship often constitutes a very prolific *nidus* for the generation of the poison of the disease. Dr. Gillkrest enumerates nearly forty vessels or squadrons, in which at different periods the disease has appeared.[1] The first appearance of yellow fever on shipboard usually takes place while vessels are in port, or very soon after they have left port. Dr. Burnett, who saw a great deal of the disease in the ships of the British fleet on the Mediterranean station, says that, with one exception, he never knew an instance where the crew of a vessel were attacked after being some time at sea.[2] Dr. Currie, of Philadelphia, supposed that crowded transports, or ships of war, generally, if not always, constituted the original and proper sources of the matter of contagion, or the poison of the disease.[3] Dr. Barrington says that the disease made its appearance on board the United States ship Hornet, in 1828, while lying at Sacrificios, a small island about three miles from Vera Cruz. The ship had been lying there at anchor twenty-six days, when the first decided case occurred; there was no epidemic in the city of Vera Cruz, excepting the dengue; nor was the fever prevalent at any place where the vessel had touched during her cruise. There can hardly be a doubt as to the *origin* of the disease, here, in the ship. Other cases of a like character are on record. In 1799, the frigate General Green sailed from Newport, Rhode Island, for Havana. She had tempestuous weather, leaked badly, and became very foul, the weather being excessively hot. Yellow fever appeared amongst her crew before she arrived in port, which was at the time free from the disease.[4] M. Chervin has collected a considerable number of similar instances, which seem to be well authenticated, and which, so far as I know, are uncontradicted.[5]

There is another circumstance in connection with the prevalence of yellow fever on shipboard, which ought to be stated. The disease is said in many instances to be confined to certain portions of the ship; or at least to prevail more extensively in certain portions than in others. Dr. Wilson says: "It is always at the beginning confined to a small space. It often continues for awhile in one berth, whence it sometimes crosses to the opposite berth; sometimes it travels along one side, returning pretty regu-

[1] Cyc. Prac. Med., vol. ii. p. 270.
[2] Burnett on the Med. Fever, p. 3.
[3] Currie's Dis. of Am., p. 60.
[4] Devèze, p. 158.
[5] Rapport de l'Acad. Roy. de Méd., 1827, p. 9.

larly by the other; and sometimes it traverses the ship from the rear to the forepart, or in a contrary direction. But in a majority of instances, it begins in the vicinity of the pumps and main hatchway, where the shell of the ship is most dependent, where water draining from other parts collects, and where heat is most intense."[1]

The fact of the limitation of yellow fever *to certain well-defined quarters, or neighborhoods*, of the cities in which it is epidemic has been so generally observed, that it is hardly necessary to multiply examples of this limitation. The extension of the boundaries of this *infected district*, as it is called, almost always takes place gradually. Dr. Nott, of Mobile, in a private letter to me, says: "I have, on two occasions, seen yellow fever commence in a point in the town, and eat through it, square by square, like worms in a cotton field—taking each time nearly a month for this process." Arejula, in his account of the epidemic of Cadiz, in 1800, says: "We also ascertained that the disorder not only spread from one individual to another, but that it passed from one house to the next adjoining, and so on along the street, ultimately affecting the whole district.[2] Arejula also gives an account of the origin and spreading of the disease at Malaga, in 1803. He traced it regularly and gradually from its focus, first to one house, then to another adjoining, and so on through a whole street or district.[3] M. Berthe, who was one of the French commission to investigate the epidemic of Andalusia, in 1800, says: "It was distinctly observed that the malady affected to seize, with scarcely any interruption, all the houses which were situated on the same side of a street, and that it rarely passed over to the other side, where the streets were wide and well aired. In some parts of the town the distemper has been seen to stop, as it were, for a time, as soon as it had reached to houses standing in a public square, and even to retrograde with respect to the direction in which it had previously advanced, by appearing in the adjoining houses, rather than in those which were separated by the breadth of the square."[4] The Cadiz epidemic of 1800 commenced in a quarter of the city called the *Barrio de Santa Maria*, to which quarter it was at first confined; it gradually spread to other portions of the city. The same

[1] Memoirs of West Indian Fever, p. 157.
[2] Reports, etc., by Sir J. Fellowes, p. 36.
[3] Ibid., p. 164.
[4] Bancroft's Essay, p. 459.

thing is true of other epidemics. Dr. Hosack says: "Whenever the yellow fever has been introduced into the cities of the United States, its first extension has always been slow and gradual. Upon several occasions its boundaries have been accurately defined by our board of health. This was remarkably the case in New York, in 1805. The disease in that year was confined for some weeks to a small portion of the eastern side of the city, and, as stated by the board of health, not a case occurred in any part of the town that was not referable to that as its source. In a short time, the infection extended a few streets further; the board of health again defined its limits, and again declared that still not a case had occurred that could not be traced to this part of the city as its source."[1] The disease at Gibraltar is almost always confined to the western face of the rock, and to a small village situated at the base of the rock, on its eastern side.

SEC. II.—*Season.* The period of the year during which yellow fever prevails most extensively, varies with the climate and temperature of different localities. In the cities of the United States, it usually commences in the months of July or August, and continues till the first frost. The great epidemic of 1793, in Philadelphia, began early in August, and ceased about the middle of October; the largest daily mortality taking place during the second week of the latter month. At Seville, in 1800, the epidemic commenced on the 23d of August, and continued till December; the principal mortality was in October.[2]

The editors of the *New Orleans Medical Journal* have published a tabular statement of the cases of yellow fever received into the Charity Hospital of that city, for twenty-one successive years, from 1822 to 1843, inclusive, with the dates of the first and last case for each year. During fifteen of these twenty-one years, the disease was sufficiently extensive to be called *epidemic;* the number of cases received ranging from ninety-four to eleven hundred and thirteen. The dates of the first receptions vary from May 23 to September 3, the largest number falling in the months of July and August. The dates of the last receptions vary from November 13 to December 31; the largest number

[1] Hosack's Med. Essays, vol. i. p. 309.
[2] Reports, etc., by Sir J. Fellowes, p. 421.

falling in the month of November, and almost always after its middle period.[1] Sir James Fellowes has published a similar abstract in connection with the general Spanish epidemic of 1804. He gives the population of twenty-three towns in which the fever prevailed; the period of its commencement and cessation in each, the day of the largest mortality, the total number of deaths, and the proportion of males and females. The earliest period of the commencement of the disease was June 29, at Malaga; the latest period was October 5, at Villamartin, a small town in the province of Seville; the disease began in ten towns in August, in nine in September, and in three in October. The earliest period of the cessation of the disease was October 28, at Grenada; the latest period was January 23, at Carthagena. The disease ceased in the course of October in one town, in November in seven, in December in twelve, and in January in two.[2] Mr. Doughty says that, in Jamaica, the disease generally prevails from the beginning of August to the end of December or January.

Sec. III.—*Temperature, and Weather.* That yellow fever is a disease of warm climates, and that it prevails most extensively during the warmest seasons of the year, no one pretends to deny or to doubt. But some observers have gone further than this, and have alleged that the disease is much more likely to occur, in the localities that are subject to it, in *very warm and wet seasons*, than those that are somewhat cooler and drier. They assert that there is a general connection between certain appreciable states of the weather and the disease. Dr. Hosack says yellow fever prevails most extensively when the air is unusually moist and the weather hot.[3] Dr. Doughty says it is more likely to occur in the West Indies, after copious rains. Sir Gilbert Blane said that the fever was restricted to those regions where the range of the temperature was as high as 80°. Others have alleged that the disease can occur only in those places where the average temperature at 3 o'clock P. M. is not less than 79°, during the summer, and especially during the two whole months of June and July; and that *its extent and severity will be in proportion to the degree in which it exceeds this point.* There is

[1] N. O. Med. Journ., vol. i. p. 103.
[2] Reports, etc., by Sir J. Fellowes, p. 478.
[3] Hosack's Med. Essays, vol. i. p. 305.

no doubt, whatever, that the disease is generally found where these high temperatures prevail; but it is far from being settled that the disease is directly and immediately dependent upon these degrees of heat; yellow fever has sometimes occurred at Stoney Hill, in Jamaica, thirteen hundred feet above the level of the sea, with a mean annual temperature of only 70°.

Sir James Fellowes gives tables of the temperature, furnished by Arejula, at Cadiz, from 1789 to 1803; from which it is quite clear *that the hottest years were not the sickliest.* They show no apparent connection between the temperature and the disease.[1] Hillary, who studied this subject with great care, says: "It does not appear, from the most accurate observations of the variations of the weather, or any difference of the seasons which I have been able to make for several years past, that this fever is any way caused or much influenced by them, for I have seen it at all times, and in all seasons of the year, in the coolest as well as in the hottest time of the year; except that I have always observed that the symptoms are generally more acute, and the fever usually higher, in a very hot season, especially if it was preceded by warm, moist weather, than it usually is when it is more cool."[2] M. Catel believes that the epidemic prevalence of yellow fever at Martinique and at other places is greatly favored by the warm and humid winds from the southeast; and by a stagnant atmosphere.[3] He says, further, that at Martinique the disease is always rendered more severe and malignant, by violent thunder-storms. Dr. Gillkrest, in his account of the Gibraltar epidemic of 1828, says: "By ample tables in our possession, it does not appear that, either before the appearance of the disease in the garrison, or during its progress, any atmospheric changes took place, differing materially from other years in which epidemics did not occur. The average heat was not greater than that of the preceding year. The quantity of rain, which had fallen up to the appearance of the epidemic, was within a fraction of that which fell in 1827. The influence of a prevalent easterly wind had been much dwelt upon in the explanations offered respecting the epidemic of 1804; but, in 1828, no unusual prevalence of that wind took place."[4] According to Humboldt, there

[1] Reports, etc., by Sir J. Fellowes, p. 413, *et seq.*
[2] Rush's Hillary, p. 107. [3] De la Fièvre Jaune, &c., par M. Catel.
[4] Cyc. Pract. Med., vol. ii. p. 279.

was no yellow fever at Vera Cruz for eight years previous to 1794, although there was nothing unusual in the state of the weather during this period.[1] The editors of the *New Orleans Medical Journal*, in their notice of the health of the city for 1844, make the following remarks: "The health of New Orleans was perhaps never known to be better. No epidemic whatever has prevailed during the year. The summer has been one of the hottest ever experienced, with frequent showers during July and August. Thus it would appear we have had a large share of *two* of what have generally been considered the most *essential agents* in the production of the remote cause of summer and autumnal diseases, to wit, heat and moisture. As to the other ingredients, dead animal and vegetable matter, one would suppose there was never any deficiency, about such a place as New Orleans. Well, we have here all the hypothetical elements of hypothetical malaria;—but where are the much dreaded consequences?"[2] The Board of Health of the city of New Orleans, in a report made in 1846, say: "The experience of former years would lead us to conclude that more or less rain, or a greater or less degree of heat, has very little to do with the production of yellow fever; for that disease has been known to prevail here alike in dry and wet seasons, and without regard to the variations of temperature in the summer months."[3]

SEC. IV.—*Age.* Writers upon yellow fever very rarely say anything about the age of its subjects. The reasons are sufficiently obvious why a very large proportion of its victims should be those in the middle and most active period of life. It occurs, however, not unfrequently amongst children.

SEC. V.—*Sex.* It is quite certain that yellow fever destroys very many more males than females; but in order to determine positively the real difference in the susceptibility of the sexes to the disease, more accurate and conclusive investigations are necessary than have yet been made. The great and uniform preponderance of male over female deaths is in no degree sufficient to settle this question; since it is obvious, at first sight, that, under the circumstances which generally attend the epidemic

[1] Cyc. Pract. Med., vol. ii. p. 291. [2] N. O. Med. Journ., vol. i. p. 216.
[3] Ibid., vol. ii. p. 475.

prevalence of yellow fever, the number of males who are exposed to the essential cause of the disease, and who are *at the same time susceptible of the disease*, is almost always vastly greater than that of females. The mortality from yellow fever is almost wholly confined to strangers, and the unacclimated in cities where it prevails, and a vast proportion of these are men. I do not mean by these remarks to deny that females are less liable to the disease than males: I mean merely to say that *the apparent results of the tables of mortality do not justify the conclusions which have been drawn from them*, for the obvious reasons that I have just given. In this connection, it would be interesting and important to ascertain whether there is any difference, depending upon sex, in the liability of the children of residents in yellow fever cities to the disease. After these qualifying remarks, the reasonableness and necessity of which can hardly be called in question, I proceed to state some of the results of observation, in regard to the actual difference in the prevalence of the disease in the two sexes. In a short but interesting paper on the History, Topography, and Causes of Yellow Fever, by Dr. Bennet Dowler, published in the second volume of the *New Orleans Medical Journal*, notice is taken of a terrible epidemic which ravaged the Island of Barbadoes in 1647. In a history of the epidemic, published by Ligon, ten years after its occurrence, it is stated, that "*for one woman that died, there were ten men.*" Dr. Gillkrest says: "In some epidemics, females have remained wonderfully exempt; this was the case during a terrific epidemic at Dominique and Martinique, in 1801, as the writer of this witnessed; for while two battalions of the 68th regiment, composed of fine young men, suffered so much from the disease as not to be able latterly to furnish any men for duty, and had lost forty-six officers within six months, not a single woman was attacked; and it may be observed that, in those days, more females were allowed to embark with regiments from home than at present."[1]

During the Spanish epidemic of 1804, the aggregate mortality in twenty-three towns was 45,822; the male deaths amounting to 28,352, the females to 17,470. This general result, on so large a scale, would seem quite conclusive as to the greater liability of

[1] Cyc. Prac. Med., vol. ii. p. 279.

the male than the female sex to this disease; but a closer examination and analysis of the table will strengthen the doubts that I have already ventured to express, in relation to this subject. Taking five of the large seaports, the difference in the mortality of the sexes is very great, as might naturally be supposed. The male deaths in Malaga, Alicante, Cadiz, Carthagena, and Velez Malaga amount to 21,805, and the females to only 11,713. But in five of the larger inland towns, more or less removed from the coast, where we have a right to presume there are fewer strangers and sailors, the female mortality exceeds even that of the male, the former amounting to 3961, and the latter to 3576. In Ecija, an interior town of Seville, some eighty miles from the sea, the male mortality was 1380, and the female 2422.[1] The aggregate mortality in Charleston, S. C., during ten years, between 1817 and 1839, was as follows: Males, nine hundred and seventy-six; females, one hundred and seventy-eight.

SEC. VI.—*Race.* The African race is less liable to yellow fever than the Caucasian. The comparative exemption of negroes from the disease has long been noticed. During the Philadelphia epidemic of 1793, Dr. Rush published in one of the daily newspapers the following extract from Dr. Lining's History of the Yellow Fever, as it had four times appeared in Charleston, South Carolina: "There is something very singular in the constitution of the negroes, which renders them not liable to this fever; for though many of them were as much exposed as the nurses to the infection, yet I never knew of one instance of this fever amongst them, though they are equally subject with the white people to the bilious fever." In consequence of this publication, the African Society voluntarily offered to furnish nurses and attendants for the sick. "It was not long," continues Dr. Rush, "after these worthy Africans undertook the execution of their humane offer of services to the sick, before I was convinced I had been mistaken. They took the disease in common with the white people, and many of them died with it. A large number of them were my patients. The disease was lighter in them than in white people. I met with no case of hemorrhage in a black patient."[2]

[1] Reports, etc., by Sir J. Fellowes, p. 478.
[2] Rush's Med. Inq., vol. iii. p. 80.

Dr. Lewis, in his account of the Mobile epidemic of 1843, says: "Negroes were frequent subjects of fever; these cases were similar to the mild grade of the yellow fever of the season, yet never, as far as my observation extended, arriving at the stage of black vomit; nor did a single case prove fatal in my practice amongst this class of persons. Some four or five mulattoes died of black vomit, during the season. Many cases terminated in the characteristic hemorrhages, and others again passed through all the stages of grave yellow fever, requiring the same active stimulation to sustain them in the collapse stage that were used under similar circumstances with the whites. These cases were confined to the mulattoes. Notwithstanding the great fatality that attended this class in 1813, we are bound to conclude that, as a general rule, they are exempt from the noxious influence of the poison of yellow fever. They constitute, especially in autumn, a large portion of our population; many of them recently from Virginia, and the Carolinas, coming strictly under the head of unacclimated persons. Those unacclimated suffer more than those long resident amongst us; still, they have black vomit so seldom as scarcely to constitute an exception to the general rule."[1] In 1820, says Dr. Daniell, near three hundred native Africans, recently captured on the coast, by government vessels, were brought into Savannah. They remained there during an epidemic yellow fever, but not one suffered from the disease.[2] Dr. Dickson says he has never known an African negro to be attacked by yellow fever.[3]

Sec. VII.—*Constitution.* It would seem that yellow fever is more likely to attack the stout and plethoric than the more feeble and delicate. Mosely says the disease is incidental only to the gross, inflammatory, and plethoric; and again: "Subjects most likely to be attacked by the *Endemial Causus*, are the florid, the gross, the plethoric—that sort of strong, full, youthful people, with tense fibres, who in England are said to resemble the picture of health." Sir Gilbert Blane says: "Those who are young, fat, and plethoric, are most apt to be attacked; and more of our officers in proportion were seized with it than the common men."[4] It should be remembered that a pretty large proportion of the un-

[1] N. O. Med. Journ., vol. i. p. 416.
[2] Fevers of Savannah, p. 64.
[3] Dickson's Essays, &c., vol. i. p. 345.
[4] Obs. Dis. Seamen, p. 398.

acclimated are likely to consist of this class of persons—the young, active, and robust, coming from cooler climates.

SEC. VIII.—*Occupation.* The largest number of persons destroyed by yellow fever are soldiers and sailors, the reasons for which are sufficiently obvious. It is alleged, by many writers, that there are certain occupations which render persons engaged in them to a great extent exempt from the disease. This has been said to be the case with butchers, and workers in leather, soap, and tallow. I do not think there is any good reason for this opinion—the evidence upon which it is founded, so far as I can judge, being altogether inadequate. Dr. Gillkrest says: "Circumstances connected with localities being equal, the upper classes of society seem, on all occasions, to suffer from attacks in a full proportion."

Matthew Carey, in his account of the Philadelphia epidemic of 1793, says: "To the *filles de joie*, it has been very fatal. The wretched debilitated state of their constitutions rendered them an easy prey to this dreadful disorder, which very soon terminated their miserable career. To hired servant-maids it has been very destructive. Numbers of them fled away; of those who remained, very many fell, who had behaved with an extraordinary degree of fidelity."[1] In this connection it may be added, that all the attendants upon the General Hospital of Barcelona, during the epidemic of 1821, who died with yellow fever, are said to have been suffering at the time under chronic diseases. Dr. O'Halloran says the physicians of Barcelona generally remark that scarcely an individual escapes an attack of yellow fever who labors under venereal or chronic disease.[2]

SEC. IX—*Acclimation.* In this chapter, more appropriately than anywhere else, may be placed a few remarks upon the influence of a prolonged residence in yellow-fever localities, in rendering the system unsusceptible to the poison of the disease. This change in the system is called *acclimation.* It is most speedily and effectually wrought by the *occurrence of the disease itself;* but it is quite evident that it may be more slowly and gradually effected by a *continued residence in yellow-fever regions.* The precise

[1] Carey's Short Account, etc., p. 61. [2] O'Halloran on Yellow Fever, p. 98.

conditions and causes of this exemption have not been very positively ascertained, and it is probable that they vary somewhat in different cases. There is a great difference, in different seasons and places, in the degree of protection afforded by this modification of the system. During mild epidemics, the protection is quite perfect; but when the character of the disease is highly malignant, the protection in many instances wholly fails. Some observations relating to this subject, by Dr. Lewis, will be found in the chapter on bibliography. He says, further, that "Of one hundred and twenty cases that terminated fatally at Mobile, in 1843, seven were natives, three were from Charleston, five from New Orleans; twenty had resided in Mobile from five to ten years, annually avoiding the sickly months; fifteen had been constantly in the city from four to seven years—amongst whom were four who had the fever in 1839. Sixty were strangers, never having passed a summer in a yellow-fever locality. These facts tend to the following conclusions. In healthy years, what is called *sporadic* yellow fever is confined to strangers. In years when the disease does not prevail so generally as to amount to an epidemic, the *grave cases* are confined to the unacclimated. In epidemics, the natives, old residents, and even those who have had the disease in previous years, are frequently mildly attacked; but the strangers are very generally seized, and have, in fact, to bear the violence and malignity which belong to the fever."[1]

It would seem that this protective power of acclimation does not extend to localities which are usually exempt from the disease. A very remarkable circumstance in support of this remark occurred at Woodville, in Mississippi, in 1844. This inland town then contained about eight hundred inhabitants, mostly natives, or old and permanent residents. At least it is stated that the town had been of gradual growth, for forty years, and that there had been no sudden emigration. After the appearance of yellow fever in the town, nearly two hundred persons fled to the surrounding country; *but nearly all who remained were attacked by the disease.* Dr. Stone, in his report, says: "Few persons escaped; I know of not more than five adults, and no children, except those persons, about twenty in number, who had had yellow fever formerly. Of these, one had it in Charleston, forty

[1] N. O. Med. Journ., vol. i. p. 418.

years ago; others in New Orleans, Bayou Sara, Natchez, the West Indies, and elsewhere; and all escaped, with perhaps one exception—a mild case."[1]

The great endemic of the western coast of Africa is periodical fever; but yellow fever has occasionally appeared at some of the settlements. It prevailed at Sierra Leone, in 1823, and in 1829, and was as fatal amongst the old residents as the newcomers.[2]

It would seem that at certain times, and in certain localities, the poison of yellow fever acquires such an intensity as to overbear all the influences which ordinarily resist it. Everything gives way before it; neither age, sex, nor race is spared; and not even the most thorough acclimation, nor the previous occurrence of the disease, is sufficient to ward off its assaults.

This preservative influence of acclimation seems to be pretty readily lost or destroyed, or at least greatly diminished, by a removal from yellow-fever regions to cooler latitudes. Bally reports the case of a lady, who, born in Canada, had resided for thirty years in one of the Antilles. After an absence of two years, passed in the North, she returned, and soon after died with yellow fever, at the age of fifty-four years.[3]

SEC. X.—*Exemption from Subsequent Attacks.* Yellow fever very rarely occurs a second time in the same individual. This exemption from a second attack of the disease was noticed during the last century; and it has been since corroborated by the observations of many French, English, Spanish, and American physicians, amongst the earliest and most distinguished of whom were Professor Arejula, and Sir William Pym. This point in the natural history of yellow fever was made the subject of a special and formal investigation, after the cessation of the epidemic at Gibraltar, in 1828. At the instance of Sir William Pym, a commission was appointed, for the express purpose of collecting such facts as might settle the question. The commission consisted of thirteen physicians—French, English, and Spanish. Louis was appointed President, Dr. Barry, Vice-President, and Trousseau, Secretary. The distinguished Chervin

[1] N. O. Med. Journ., vol. i. p. 532. [2] Boyle's Dis. West. Africa, p. 289.
[3] Devèze, p. 107.

was also a member of the commission. The medical men of Gibraltar, civil and military, thirty-three in number, all of whom had been familiar with the disease, appeared before the commission, and stated the results of their experience. The aggregate number of patients with the disease, seen or treated by them all, amounted to about *twenty-seven thousand.* These physicians were invited to state the number of cases in which they had known the disease to occur a second time; and as simple assertions were inadmissible, the commission decided that they would receive those cases only in which the symptoms of the first and second attacks could be given, whether these symptoms had been noted by the physicians who communicated them, or whether they came through the patient himself, but were unequivocal. The whole number of cases of presumed double attack, thus communicated to the commission, was only *thirteen!* Upon these thirteen cases, each member of the commission expressed his opinion by a vote, writing upon a piece of paper the word *evident, probable, doubtful,* or *inadmissible,* for each case. A majority of the commission declared in this manner one of the cases *evident,* three of them *probable,* and the remainder *doubtful* or *inadmissible.* The following fact on a much smaller scale, but hardly less conclusive, was communicated to the commission by M. Broadfoot. The military domestics employed during the epidemic in the care of the sick were one hundred and sixty in number, and none of them had had yellow fever in any anterior epidemic. The civil domestics were sixty-one in number, and with two exceptions had already had the disease. These two, and these two only, amongst the last, had the disease; and forty of the military domestics, all the rest escaping. Other facts of a similar character were also presented to the commission. Slight and mild attacks of the disease seemed to be quite as preservative against its recurrence as grave and severe ones; and it did not appear that the protective effects were in any degree diminished by time.

Dr. Lewis has investigated this question with some care, and the result of his inquiries differs somewhat from that which I have just given. Five respectable citizens of Mobile, he says, have had the disease as many as three times, according to the testimony of competent judges. As many as twenty of his own patients, who were mildly attacked in 1843, stated that, according to their

physicians, they had already had yellow fever during the epidemics of 1837 or 1839. Dr. Lewis concludes that, in 1843, about one-fifth of the patients who had mild yellow fever, had been subjects of the disease during previous epidemics. His opinion seems to be that, at least during the prevalence of grave epidemics, persons who have previously had the disease are, to a certain extent, liable to second attacks in a mild form.[1]

SEC. XI.—*Epidemic Influences.* Yellow fever usually prevails in a given locality more or less extensively; it becomes for the time being, as it is said, *epidemic.* The returns or recurrences of these epidemic seasons are altogether uncertain and irregular; —they give no note of their coming; the laws which govern the revolutions of their periods are wholly unknown to us. One of the most remarkable and extensive of these *large epidemic periods,* was that which commenced in the year 1793, and continued for several years. I do not propose to go into any extensive or general enumeration of the epidemics whose histories have been preserved.

It has been said that the visitations of the disease, in New Orleans, had shown a tendency to observe *alternate* years; but an examination of the facts, as they have been published, during a continuous period of twenty-two years, from 1822 to 1843, both included, gives but little support to this suggestion. From 1833 to 1841, the epidemic prevalence of the disease returned, with a good deal of regularity, on each alternate year; but from 1827 to 1830, and from 1841 to 1843, the disease prevailed regularly every year. According to Dr. Simons, the first appearance of yellow fever in Charleston, was in 1690 or 1700. It has since occurred in the following years, to wit: 1703, 1728, 1732, 1739, 1745, 1748, 1753, 1755, 1792, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1802, 1804, 1807, 1817, 1819, 1824, 1827, 1828, 1830, 1834, 1835, 1838, and 1839.[2] Dr. Catel says that Martinique was almost entirely exempt from the disease, except a few sporadic cases, from 1828 to 1838.[3]

"That the essential cause of yellow fever," says Dr. Dowler, "will ever be discovered, or, being discovered, will be controlled

[1] N. O. Med. and Surg. Journ., vol. i. p. 418.
[2] Am. Journ. Med. Sci., Feb., 1836. [3] Rapport, &c., par M. Chervin, p. 6.

or prevented by human art, is altogether improbable. Its mysterious cycles culminate, decline, and reappear. Charleston, desolated at the close of the seventeenth century, was exempt in the first quarter, but a sufferer in the second quarter of the eighteenth, and then, half a century of exemption again followed—a period much longer than that which now cheers the cities of New York, Philadelphia, Boston, and Baltimore, with the hope that yellow fever has taken its leave of them forever. But the last decennial period of the past century, and the first of the present, relumed the flames of the epidemic in Charleston, where they had smouldered so long, and in which they still continue to break out almost annually. Charleston suffered nearly a century in advance of New Orleans, and is still as great a sufferer as the latter."[1] There is nothing in the past history of the disease at all incompatible with the probability that the elliptical sweep of its epidemic periods may again bring it within the more northern cities, from which, for many years, it has been absent.

SEC. XII.—*Sporadic.* Yellow fever, as I have just said, generally prevails in the form of an epidemic; but this is not always the case. It is now very well ascertained that yellow-fever cities are sometimes visited by *isolated, sporadic* cases of the disease. The question of the occurrence of the disease in this form was carefully studied by Louis and Trousseau at Gibraltar, in 1828. Mr. Amiel and Mr. Fraser communicated to them the histories of forty-five cases, derived from the hospital registers, which had occurred during *non-epidemic* seasons. Some of these cases, Louis regards as spurious or doubtful; but he is quite confident of the genuineness of the others. Dr. Gillkrest says he is in possession of such a body of evidence, drawn from registers and other authentic sources at Gibraltar, as would, of itself, place the matter beyond all doubt. He adds that in the month of April, 1829, the records of the civil hospital in that garrison were examined, and a certificate drawn up and signed by nine gentlemen, to the effect that thirty-eight cases, of which they found details duly recorded in non-epidemic years, were identical in character with the cases which occurred there during the epidemic of 1828.[2] Mr. Glasse, who was for a long time a resident at Gibraltar, says, in

[1] N. O. Med. Journ., vol. ii. p. 178. [2] Cyc. Prac. Med., vol. ii. p. 270.

a letter to Dr. Burnett: "During the spring and autumn, I have been in the habit of seeing *solitary cases* of fever attended with black vomiting, and other severe symptoms."[1]

SEC. XIII.—*Marsh Miasmata.* Medical men who look upon yellow fever as only a *high grade*, or *concentrated and malignant form, of bilious remittent fever*, attribute the disease to the unknown cause or causes of the latter, called *marsh miasmata*, developed in unusual quantity, or endowed with extraordinary virulence. This is the opinion advocated by Dr. Bancroft, in his elaborate treatise on the causes of this and other epidemic diseases; and by many others, who believe in the local and domestic origin of the disease.

But the objections to this opinion are obvious and insuperable. In the first place, it is as well settled as any such question can be, that yellow fever differs, radically and essentially, from all the forms of periodic or marsh fever. The two diseases may prevail together—as marsh fevers and smallpox, or typhus, may—but this is rarely the case; and in very extensive regions, where periodical fevers in their worst forms constitute the principal diseases, *yellow fever is never seen.* Again, in many yellow-fever localities, there is no evidence, whatever, of the existence of marshes, or marsh miasma. Dr. Gillkrest says: "It cannot be admitted that Gibraltar furnishes sources from which *malaria, is the usual sense of that word*, arises, sufficient to account for the appearance of a malignant fever."[2] In 1844, yellow fever prevailed very extensively at Woodville, a small town in the interior of Mississippi. The town is built on a rolling ridge, three hundred and forty feet above the bank of the Mississippi River; the soil is clay and sand; the town is free from filth; and there are no swamps or ponds in the neighborhood.[3] The Island of Barbadoes is described as rocky and dry, with very little marshy or wet land.[4] Brimstone Hill, in the Island of St. Kitts, is a conical mount, rising to the height of seven hundred feet above the level of the surrounding plain. It is described as a volcanic rock, dry, nearly destitute of vegetation, and desolate in its entire aspect. It is generally free from yellow fever, but not uniformly so. In

[1] Burnett, p. 329.
[2] Cyc. Prac. Med., vol. ii. p. 279.
[3] N. O. Med. Journ., vol. i. p. 530.
[4] Rush's Hillary, p. 5.

1811 and 1812, the disease appeared there, and was very fatal. Stoney Hill, in Jamaica, is thirteen hundred feet above the level of the sea. It is described as an entire mass of calcareous rock, covered with trees, excepting on the summit; but with little soil, and producing scarcely any grass or herbaceous plants. It is generally healthy; but yellow fever does sometimes prevail, extensively and fatally, amongst the troops stationed on its summit. Furthermore, the frequent occurrence of the disease in ships at sea is entirely incompatible with the doctrine of which I am now speaking; and the whole subject may be fairly and definitively dismissed with an expression of surprise that the doctrine could ever have found any countenance or favor.

SEC. XIV.—*Decaying Animal and Vegetable Matter.—Filth.* In the almost interminable discussion which has been going on during the last half century about the causes of yellow fever, there is no one element that has played a more prominent part than the decay or decomposition of animal and vegetable matter. Most of the advocates of what is called the *domestic origin* of the disease, and the deniers, at the same time, of its contagious properties, have attributed it principally to this animal and vegetable decomposition, and to various local accumulations of filth, of one kind and another. It is well known that the dreadful Philadelphia epidemic of 1793 was referred, for its origin, by Dr. Rush, to a quantity of damaged coffee, decaying on one of the wharves of the city. The principal argument in favor of this opinion is the fact, generally admitted, that the disease most commonly commences in the low, crowded, and filthy quarters of yellow-fever cities, lying near the docks and wharves. Thus, the *Barrio de Santa Maria* is usually the hot-bed of the disease in Cadiz. In 1795, at New York, the disease was mostly confined to the vicinity of Peck-slip, a crowded and filthy locality;[1] and the same thing has occurred in other years. Dr. Edward Miller, of New York, one of the earliest and most unqualified advocates of the agency of filth in the production of yellow fever, says that, at the commencement of the destructive epidemic of 1798, in that city, between twenty and thirty persons in a small neighborhood, at the lower end of John street, were suddenly seized with

[1] Hosack's Med. Essays, vol. i. p. 298.

the disease in one night, in consequence of a blast of putrid and most offensive exhalations from the sewer of Burling slip.[1]

On the other hand, the agency of this cause is stoutly and boldly denied by many observers, and especially by those who believe in the contagious property, either qualified or absolute, of the disease. The principal objections to this doctrine are these. In the first place it is asserted, and not denied, that yellow fever has sometimes made its appearance, and prevailed extensively, in localities quite free from any unusual accumulations of filth, either animal or vegetable. In the second place, it is quite notorious that, although the disease oftener than otherwise commences in filthy localities, still, it very frequently extends to the more airy and cleaner neighborhoods. In the third place, if the disease was generated from this source, it ought to occur with more regularity and constancy; since the alleged cause is always more or less extensively present and active, in some portions of all yellow-fever cities, and of others where the disease is never seen. It seems to me that these objections are quite unanswerable. Yellow fever occurred on board the United States schooner Grampus, in 1829. Dr. Barrington says: "This vessel was remarkable for her uniform neatness and cleanly appearance throughout. The bilge-water smell was seldom perceived; the water coming out of the pumps perfectly clear."[2] Several similar instances are mentioned by Dr. John Wilson. In 1824, the disease prevailed extensively on board the Rattlesnake, a new British ship, on the West India station. She had just been thoroughly cleaned. Dr. Wilson says: "When the process of purification was considered complete, I examined every part of the hold's surface, and found it in every part, from the hatches to the kelson, clear, clean, and dry, scarcely capable of soiling a white glove." It is proper to state, however, that in most instances of the occurrence of the disease on shipboard, it has been in connection with very damp and filthy holds. I do not mean to say that accumulated and concentrated filth, acted upon by a high temperature, does not promote and favor the origin and spread of yellow fever; there is good evidence that it does so; I mean merely to say that we have no sufficient grounds for referring the disease directly and exclusively to this cause.

[1] Works of E. Miller, M. D., p. 98. [2] Amer. Journ. Med. Sci., Aug. 1833.

In connection with this subject, it may be mentioned that Dr. John Wilson, apparently an attentive observer of yellow fever, and generally a sensible writer, is disposed to refer the disease to a peculiar kind of ligneous decomposition, for its essential cause. He thinks this hypothesis corresponds to all the observed facts in connection with the subject, better than any other.[1] I cannot see that it is any more plausible or any more reasonable than the rest.

SEC. XV.—*Contagion.* Let me relieve the friendly and indulgent reader who has accompanied me, cheerfully and not without interest, I would fain hope, thus far, in my history of yellow fever, from an apprehension that he may very naturally feel, on beholding the caption of the present section in my manifold chapter on the etiology of this disease;—it is not my purpose to occupy his time and attention with anything like a *history* of the multiform, complicated, and sometimes bitter controversies, which have run through the medical annals of the last fifty years, upon the contagious and non-contagious character of the disease. In conformity to the general design and arrangement of my book, I shall confine myself to a simple statement of the actual and positive condition of our knowledge upon this subject; all which can be done, I think, in the space of a few pages.

There have been three leading and principal doctrines, or opinions, upon the question before us, each of which I wish and will endeavor to state, together with the grounds upon which it rests, as fairly and explicitly as I can.[2]

[1] Memoirs of the West Indian Fever, p. 139, *et seq.*

[2] The great controversy between the contagionists and the non-contagionists originated in the following circumstances. Towards the close of the last century, a project was formed in England for the establishment of a colony—partly benevolent and partly commercial in its character—on the island of Bulam, or Boullam, lying at the bottom of a deep bay, about fifty miles from the open sea, on the Western coast of Africa, in the 11th degree of North latitude. Early in the month of April, 1792, the ship Hankey, in company with another vessel loaded with stores and adventurers, sailed from England for Bulam, where she arrived just before the commencement of the rainy season. The Hankey remained at the island nine months; soon after her arrival, a malignant disease appeared amongst her passengers and crew, consisting of more than two hundred persons, *three-fourths* of whom were its victims. Aided by a few seamen procured from other ships, the Hankey finally sailed for the West Indies, and arrived at Grenada on the 19th of February, 1793. According to Dr. Chisholm, the first person who visited the

The first of these doctrines is that which attributes to yellow fever an *absolute and unqualified contagious character.* The advocates of this doctrine allege, that the disease is *directly* and *immediately transmissible from one person to another, like measles or smallpox.* Dr. Chisholm, one of the earliest and most zealous promulgators of this doctrine, thus states the leading circumstances which influence the action of the contagious poison;—those who most carefully avoid houses where the infection is, are the most certain to escape the fever; although the disease may be in the same house, avoiding the chamber of the sick prevents infection; merely entering the chamber of the sick, without nearly approaching the diseased person, has never communicated infection; approaching near enough to the diseased person to be sensible of the fetor of his breath, or of the peculiar smell which is always emitted from the bodies of the sick in this disease, or touching the bedclothes, generally occasions nausea, slight rigors, and often headache at the moment, and, some hours after, the disease itself; actual contact, so that the perspired fluid of the sick person may adhere to the hands or other parts, of the healthy person, more certainly produces the fever; touching the wearing

Hankey, on the evening of her arrival, was a Captain Remington; and in a few days afterwards, he died with yellow fever. The crew of the Defiance were the next who visited the Hankey; five out of six were immediately seized with the fever, and died in three days. The disease now began to appear in the other vessels in the harbor, and spread successively from one to another, not one escaping. *Until the middle of April, the disease was confined to the shipping in the harbor;* it then appeared in a house close to the wharf, where it was introduced, according to Dr Chisholm, by a negro woman who took in sailors' clothes to wash. The disease then extended to different parts of the town, and during the months of May, June, and July, it appeared at various points in the neighboring country, carried thither, says Dr. Chisholm, by persons who had imprudently visited infected houses in town. From Grenada, as from a focus, this *nova pestis*—this new Malignant Pestilential Fever of Dr. Chisholm, spread to the other islands, to Jamaica, St. Domingo, and to Philadelphia—the infection being generally carried from place to place in the woollen jackets of deceased sailors.—*Chisholm's Essay*, vol. i. p. 102, *et seq.* Dr. Chisholm attributes the introduction of the disease into Philadelphia, not to the damaged coffee, but to some sailors sick with yellow fever, on board the same vessel that brought the coffee, as part of its cargo.—*Ibid.*, vol. i. p. 220. Dr. Chisholm, it is important to state, looked upon this fever as quite unlike the ordinary *remittent yellow fever*, as he called it, of the West Indies; the latter, he admitted, was of domestic origin, arising from miasmata, endemic, and not contagious. The former, he says, may have owed its production, in some instances, to the united action of pestilential contagion and the miasmata of marshes, and other direct causes of yellow remitting fever.—*Ibid.*, vol. i. p. 208. This is the doctrine of contingent contagion, of which I shall speak more fully by and by.

apparel of a person who is actually diseased, or has just recovered from the disease, as certainly communicates the infection to the healthy person, and finally, merely passing a person infected, or who wears the clothes he had on during the existence of the disease, in such a manner that the effluvia proceeding from them may be blown on the healthy person, has produced the disease.[1]

It may be interesting to my readers, while it will best illustrate the subject before us, to be made acquainted with some individual facts which tend to support the above-mentioned doctrine. Sir Gilbert Blane, in a letter to the Hon. Rufus King, relates the following occurrence. "On the 16th of May, 1795, the Thetis and Hussar frigates captured two French armed ships from Gaudaloupe, on the coast of America. One of these had the yellow fever on board, and out of fourteen men sent from the Hussar to take care of her, nine died of this fever before she reached Halifax, on the 28th of the same month. Part of the prisoners were removed on board of the Hussar, and though care was taken to select those seemingly in perfect health, *the disease spread rapidly in that ship*, so that near one-third of the whole crew was more or less affected by it."[2] It is greatly to be regretted that the circumstances thus related, by Blane, like so many others of a similar character, should be in many respects so loose and defective. The previous history of the Hussar is not given; we are not told upon whose authority the entire narrative rests; and nothing conclusive is stated as to the real character of the fever on board the Hussar. A similar occurrence is related amongst the documents submitted by M. Chervin to the Royal Academy of Medicine. According to M. Lemarinier, in October, 1808, the French brig Paulinurus, of which he was surgeon, attacked and captured, near Barbadoes, the English brig Carnation. The yellow fever was prevailing on board the Paulinurus at the time. The English prisoners were most of them placed on board the latter, and nearly all of them had the fever. The day after the capture, M. Jance, commander of the Paulinurus, at the time mortally sick with the disease, was carried on board the Carnation, where he died on the following day. M. Lemarinier and a portion of the French crew were also transferred to the prize. *The yellow fever*

[1] Chisholm's Essay, vol. i. p. 309. [2] Blane's Dis. of Seamen, p. 605.

local vitiation of the atmosphere, is spoken of as *the combustible element* or *material;* the poison of the disease introduced from without is spoken of as *the spark that lights upon and fires the former.* Neither of these conditions alone, it is alleged, is sufficient for the generation of the disease.[1]

The above was an early and a favorite doctrine with some of the most distinguished physicians of the city of New York. Dr. Seaman, as long ago as in 1795, laid it down, in the following terms: "The general cause of yellow fever, as it appeared in this city, is what chemists call a *tertium quid*, neither one thing nor the other, but a result of the junction of certain matters emitted from a human body laboring under such a disease, with the effluvia arising from vegetable substances in a state of putrefaction. These putrid effluvia may, possibly, of themselves, generate the disease, in persons highly predisposed, and from whom, by their assistance, the fatal epidemic may be spread through a neighborhood. The spark that has kindled up the putrid vapors in certain parts of our city into action, was most probably originally introduced from other places. No yellow fever can spread but by the influence of putrid effluvia."[2] The same doctrine was adopted, and both ably and earnestly advocated, by Dr. Hosack. He classes yellow fever with the plague, dysentery, and typhus fever; all which, he says, are rarely communicable from one person to another, except through the medium of an impure atmosphere. The yellow fever, he says, was always introduced into New York from abroad, and then spread through the aid and agency of this vitiated local atmosphere. His favorite idea is that of a *fermentative process*, both in the atmosphere and in the human body, by which the specific virus of the disease is multiplied; the *fermentable materials*, as he calls them—by which he means the unknown vitiation of the atmosphere—and the specific virus, being both of them necessary to the produc-

[1] It is proper to state that even Dr. Chisholm, the great champion of the contagiousness of yellow fever, explicitly recognizes the agency of the predisposing cause. It is conceding nothing, he says, to admit that, at the time the infection of the malignant pestilential fever of 1793 was imported, something peculiar and capable of predisposing the human body to be acted on by its poison existed in the air; or that, in other words, the atmosphere possessed a peculiar constitution. But this is true, he adds, of the plague; and he denies that this constitution is ever sufficient, of itself, to give rise to the disease.—*Chisholm's Essay*, vol. i. p. 286.

[2] Med. Rep., No. 3, Art. 2.

tion of the disease. Dr. Hosack's precise notion seems to be this—that the virus introduced into the local atmosphere, already vitiated with his fermentable materials, excites and sets up in this atmosphere an assimilative process, by which the specific poison is indefinitely multiplied—and after this assimilative process has taken place, the medium has been created through which the disease may be transmitted from one person to another. He alleges, however, that, in a few rare instances, yellow fever has been communicated directly from the sick to the well, in a pure atmosphere.[1] Dr. Hosack does not believe that animal and vegetable decomposition or filth *alone*, with all the accessories of heat, moisture, and a stagnant atmosphere, is sufficient ordinarily to generate the disease.

The qualified doctrine of contagion is more or less admitted, I think, by nearly all the contagionists. Sir James Fellowes says: "The facts recorded in the preceding reports show that the disease was highly contagious in Spain; but this property seemed to depend on a certain temperature which is necessary to the existence of the disorder, and a combination of circumstances connected with individual predisposition and the climate, which, although difficult to define, may be comprehended by those who have resided in that country, and who have studied the character, habits, and mode of life of the inhabitants."[2]

There are some of the non-contagionists, also, who admit at least the possibility of this occasional and contingent contagion. Mr. Doughty, a very decided and earnest non-contagionist, says: "I am not prepared to say, whether a great number of persons, laboring under yellow fever in its violent form, and crowded into an ill-ventilated apartment, or circumscribed space, as on board ship, might not create a morbid atmosphere, of power sufficient to produce fever *sui generis*. At least, the atmosphere, impregnated with a general cause, might be rendered more virulent by the accumulated effluvia arising from numerous bodies laboring under the disease. As, for instance, a person exposed to the exhalation from the earth, or any other miasma, which has created fever in several, but whose susceptibility to its influence being less has escaped, may, by the further exposure to the accumu-

[1] Hosack's Med. Essays, vol. i. p. 253, *et seq.*

[2] Reports, etc., by Sir J. Fellowes, p. 402.

lated effluvia of many bodies affected with the disease, have febrile action produced.[1] Dr. Robert Jackson, another non-contagionist, thus speaks of the same subject. "I hold it to be proved, by the histories here alluded to, that fevers, except those specifically contagious, rarely propagate from person to person in tropical climates, but I do not deny the possibility of the contingence. If men, either in health or sickness, be crowded into damp and ill-ventilated apartments, particularly in bomb-proofs, as sometimes happens in time of war from conditions of service, or in time of peace from want of barrack-room, the air is contaminated by the emanations of a crowd of inhabitants." A material, Dr. Jackson thinks, may thus be contingently generated possessing the power of self-propagation.[2] In another place he says that, in this way, "contagion may sometimes be engrafted on the epidemic stock." Even Dr. Rush, one of the most strenuous advocates of the domestic origin of yellow fever, admits also that the poison may sometimes be introduced from abroad. At least he records, without any qualifying remarks, several such instances. The fever of 1797, at Philadelphia, he says, was derived from the foul air of a ship which had just arrived from Marseilles. A ship from Hamburg, he adds, communicated the disease, by means of her foul air, to the village of Kensington.[3]

This particular form or modification of the doctrine of contagion has been recently revived, if I may so speak, in our own country. It has been advocated with earnestness and ability by Dickson, Strobel, Monette, and others, and at least with a certain degree of success, since it has given rise in some instances to quarantine regulations. It is a point in the history of yellow fever of great interest and importance, to be finally settled only by careful and repeated observations, and my notice of it would justly be considered imperfect without some of the evidence on which the opinion rests. Amongst this evidence, are a considerable number of individual facts, like the following. In June, 1823, a Spanish brig sailed from Havana to Passages, a small secluded seaport on the shores of the Bay of Biscay, consisting mostly of a single street, placed as it were on a shelf of scarped rock, and so narrow that it does not admit of the passage of

[1] Doughty's Observ., p. 209.
[2] Jackson on Febrile Diseases, vol. i. p. 31.
[3] Rush's Med. Inq., vol. iii. p. 3.

carts or horses; while the rock forming the basis of the mountain is in some places literally in contact with the houses, which are badly ventilated, filthy, dark, and crowded. The vessel arrived on the 3d of August. On the 15th, a custom-house officer, who had been several days on board, and who was said to have been much engaged in the hold, looking after contraband goods, was taken ill, and died on the third day, with black vomit. On the 22d, a man who had been down for some time in the hold surveying the ship's timbers died. Some of the planks of the vessel having been found decayed, twelve carpenters were employed in removing them, and six of the twelve were attacked in quick succession. The opening in the side of the ship commenced on the 19th, and on the 23d, *the disease began to appear in an unequivocal form in the houses close to which she was moored.* The disease was almost entirely confined to the immediate vicinity of the brig.[1]

Dr. Monette has given an account of the occurrence of yellow fever at Washington, Mississippi, in the autumn of 1825. This was then a small inland town, six miles east of Natchez, containing about two hundred and fifty inhabitants, of whom nearly one-half were blacks. Its situation is described as elevated, free from marshes, free from filth, and the houses not crowded. It has been proverbially healthy; and the citizens of Natchez have been in the habit of fleeing thither for safety, on the appearance of yellow fever in their own city. Towards the last of August 1825, cases of the disease were officially reported in Natchez, and a great many merchants crowded into Washington, carrying with them household furniture and all kinds of goods and groceries. Several deaths soon took place in Washington, amongst the fugitives from Natchez. *Ten or twelve days after the flight from Natchez, deaths from yellow fever began to occur amongst the inhabitants of Washington.* Two of the persons, amongst those first attacked, lived together in a house entirely isolated, two hundred yards from the main street, in an elevated and clean spot; they were carpenters, and had been at work shelving rooms for the merchants from Natchez, and assisting them in opening and putting up their goods. The disease was malignant; cases occurred in all parts of the town, and the people from Natchez again fled, accompanied

[1] Cyc. Prac. Med., vol. ii. p. 292.

by the citizens of Washington, to the surrounding country. One fourth of the white population fell victims to the epidemic. *Dr. Monette asserts that, in several well-ascertained instances, cases of the disease occurred in the surrounding country, in persons who had not been in Washington, but who had been exposed to the blankets and bedding of those who had died of the disease.* The most striking case of this character is thus stated. "At a gentleman's house, two miles from Washington, two of his relations, after being removed thither, died of yellow fever. The bedding on which they had lain was thrown together into an upper room, where it remained several days. In this place it was found by three small girls, who for two or three days, unknown to their parents, where in the habit of going into this room to play upon the bedding. In a short time all three of these children were attacked with well-marked yellow fever, although the situation has been noted for its salubrity, and they had no opportunity of contracting the disease elsewhere. These were the only persons in the family who suffered from the disease."[1] These cases of Dr. Monette's seem to have been mostly referable to the action, not of direct personal contagion, but to that of *fomites*. This constitutes a local concentrated atmosphere of the poison; and there is the most ample and conclusive evidence that it may be preserved for a long period of time in this way.[2]

SEC. XVI.—*Exposure; Fatigue; Excesses, &c.* There can be no doubt that yellow fever is frequently the immediate result of the operation of the ordinary occasional or exciting causes of dis-

[1] West. Med. and Phys. Journ., vol. i. p. 73, *et seq.*

[2] It seems to have been forgotten, that even Dr. Rush distinctly admitted the possibility of this origin of the disease. He says: "It is possible a portion of the excretions of the sick may be retained in beds or clothes, so as to afford an exhalation that may in the course of a succeeding summer and autumn, or from accidental warmth at any time, create a solitary case of fever, but it cannot render it epidemic. A trunk, full of clothes, the property of Mr. James Bingham, who died of the yellow fever in one of the West India Islands, about fifty years ago, was opened, some months after it was received by his friends, by a young man who lived in his brother's family. This young man took the disease and died; but without infecting any of the family; nor did the disease spread afterwards in the city. The father of Mr. Joseph Paschall was infected with the yellow fever of 1741, by the smell of a foul bed in passing through Norris's Alley, in the latter end of December, after the disease had left the city."—*Rush's Inq.*, vol. iii. p. 103.

ease; and that persons exposed to the essential poison of the disease might escape, were it not for the co-operation of the latter influences. Still, it must be admitted that the extent to which these causes act, in the production of the disease, has been only very loosely studied and very imperfectly ascertained; and, in many instances, the power of the endemic cause is so great and so overwhelming as to stand in need of no assistance from accidental or collateral agencies. Dr. Barrington says from all he has seen, he is convinced, that the temperate man, as a general rule, has the best chance; but he says, also—and these are his words—"I have not observed that those who were accustomed to the regular and moderate use of spirituous drinks, were more obnoxious to attacks of fever, than others of rigidly temperate habits; on the contrary, and I regret to say it, because it affords a pretext for the intemperate, in two or three instances, I have seen the abstemious carried off in a few days, while hard drinkers, under the same exposure, have escaped."[1] Dr. Rush, in his account of the fever of 1803, in Philadelphia, says: "I did not see a single case in which the disease came on without an exciting cause; such as light clothing and bedclothes, sitting at doors after night, a long walk, gunning, and violent and unusual exercises of any kind."[2] This observation would be of more value than it is, if Dr. Rush had been somewhat more careful and discriminating than he was, and less ready to jump blindly to general conclusions. Dr. Hillary—that honest and careful old observer—says: "The disease most readily seizes those who use vinous or spirituous liquors too freely; and still more readily, those who labor hard, or use too violent exercise, and are at the same time exposed to the influence of the scorching rays of the sun in the daytime, and soon after expose themselves too suddenly to the cool dews, and damp air of the night, and especially if they drink spirituous liquors too freely at the same time."[3]

Sir Gilbert Blane, speaking of acute diseases generally, amongst Europeans newly arrived in the West Indies, says: "It cannot be too much inculcated on those who visit tropical countries, that exercise in the sun, and intemperance, are most pernicious and fatal practices, and that it is in general by the one or the other

[1] Am. Journ. Med. Sci., Aug. 1833. [2] Med. Inq., vol. iv. p. 58.
[3] Rush's Hillary, p. 107.

that the better sort of people, particularly those newly arrived from Europe, shorten their lives."[1] Matthew Carey says of the Philadelphia epidemic, of 1793: "To tipplers and drunkards, and to men who lived high, and were of a corpulent habit of body, this disorder was very fatal. Of these many were seized, and the recoveries were very rare."[2] Dr. Devèze, in his account of the same epidemic, says it has always been remarked that, during the prevalence of yellow fever, persons newly married are constantly its victims.[3] "Of all the exciting causes of yellow fever," says Bally, "the act of coition is the most powerful; how many have we seen, seized by a chill on leaving the arms of Pleasure, terminate in a few days their career! How many even have we seen the victims of a simple nocturnal pollution!"[4]

SEC. XVII.—*Essential Poison.* In regard to the essential poison, the application of which to the system gives rise to yellow fever, I can do but little more than to repeat the remarks that have already been made in connection with the essential etiological poisons of other fevers. The nature and composition of the former, like those of the latter, are entirely unknown to us. It would seem to be clearly enough of terrestrial origin; and not capable of being transmitted, to any considerable distance, through the atmosphere. Most of its ascertained properties and relations have already been indirectly stated; inasmuch as they are connected with the causes of yellow fever already detailed. It is quite unnecessary, and it would be a very thankless and unprofitable labor, to enumerate the successive hypotheses and speculations which have been started in regard to the origin, nature, and mode of action of this poison. The animalcular or cryptogamous hypothesis seems to me more plausible and less refractory than the others; but it is only a pure hypothesis. As to its mode of action on the system, the organs by which it is received, and so on, we are as profoundly ignorant as we are of its nature and composition. It is probable that it is introduced into the system through the lungs; although this is merely a conjecture. It is entirely philosophical, to consider it as a peculiar poison—an agent *sui generis*—differing from all others, like the essential poison of smallpox, hydrophobia, and so on. A very short exposure to

[1] Diseases of Seamen, p. 132. [2] A Short Account, etc., p. 61.
[3] Devèze, p. 114. [4] Du Typhus d'Amerique, par Vr. Bally, p. 375.

its influence is sufficient to produce the disease; it is very probable that a single inhalation is enough. It may be retained for a considerable period of time shut up in the holds of vessels, in trunks or bales of clothing, in bedding, and even in apartments of houses, while the surrounding atmosphere is free from it; in some of these forms it may be transported long distances from the place of its origin, and there give rise to the disease. The only known means of destroying it consists in a temperature as low as the freezing point, and this is always immediate and complete in its operation.

# CHAPTER V.

## VARIETIES AND FORMS.

SEC. I.—*Season and Locality.* Yellow fever is not exempt from that very general law of pathology according to which endemic and epidemic diseases, especially, vary more or less widely in severity, and sometimes in other respects, in different periods and in different localities. Sometimes and in some places the general character of the disease is mild and the mortality small, at others it is grave and malignant and the mortality excessive. The disease varies also in other respects, in different seasons and places, sometimes one element or tendency and sometimes another in its complex pathology predominating. Thus the prevailing character of the disease may be, during one season, simple and mild; during another, violent and inflammatory; and during a third, adynamic and congestive. Similar differences have also been observed at different periods of the same epidemic, in a given locality. It is a common opinion, indeed, that the commencement of an epidemic is usually marked by greater malignancy and severity than its subsequent periods. The causes of these fluctuations and differences in the severity and character of the disease are wholly unknown to us; there are no obvious or appreciable influences to which we can attribute them; and in the absence of all positive knowledge upon the subject, we are obliged to refer them to unknown and hypothetical constitutions of the atmosphere, and to differences in the quantity or quality of the essential remote cause of the disease. It is proper to say here that, although there can be no doubt about the existence of these differences, still, their extent, degree, and frequency, have been less carefully studied, and less positively ascertained, than many other points in the natural history of this disease. There are, however, in addition to the general opinions of those who have been most extensively familiar with the disease, numerous

well ascertained and authentic facts bearing upon the question before us.

SEC. II.—*Forms, or Grades.* Different writers upon yellow fever have divided the disease into forms, or varieties, more or less numerous, depending upon different degrees of severity, or upon the preponderance of certain groups of symptoms. The most common, and I think the most natural of these groupings, is that which makes *three forms* or *varieties* of the disease, to wit: First, the *Simple* or *Mild form;* Second, the *Inflammatory form;* Third, the *Congestive*, or *Malignant form.* This subdivision is of course to a certain extent arbitrary and conventional; still, it is founded in nature, and it is both useful and convenient, on many accounts, in the description and history of the disease. It corresponds very nearly to the similar divisions in other epidemic diseases;—to the simple, the anginose, and the malignant forms, for instance, of scarlet fever.

The simple or mild form of yellow fever is marked by the smaller number of symptoms than are present in the graver cases, and by their very moderate degree of severity. Most writers make particular mention of this variety of the disease; and it is very common during certain epidemics. Louis describes it in the following terms: "Most commonly, at the commencement, there were headache, chills followed by a slight degree of heat, pains in the limbs, and redness of the face and eyes. The epigastric pains were rare, and so too were the vomitings, which were almost never spontaneous, and which in no case were of a brownish color. The heat and thirst were moderate, and so slight was the diminution of strength, that the patients did not keep their beds at all, or were there for half a day only; thus, according to their expression, going through with the disease on foot. In this form of the disease, they were able to escape the vigilance of the health inspectors, resuming familiar occupations, or playing on musical instruments, when these last made their visits. In several of these cases, the febrile symptoms were very slight, continuing only during twenty-four or thirty-six hours."[1] Dr. Lewis, of Mobile, says: "The attacks in the milder cases were occasionally so light and ephemeral, as to pass off in a few hours,

[1] Louis on Yellow Fever, p. 175.

Some writers have gone much further than this, and have alleged that several distinct diseases, or forms of disease, have been confounded under the common name of yellow fever. The opinions of Chisholm upon this point are well known. Bally proposes to admit one species which is contagious, and another which is non-contagious. Devèze says, very properly, I think, in regard to these and all other like distinctions, that they are arbitrary and unfounded.[1]

and lead the inexperienced to think the patient is in no danger. The person laboring under this form of disease will confess, on being sharply questioned, that there are slight pain and heaviness in the head, and the epigastrium is tender on pressure. Otherwise little appears to be the matter, the pulse being natural, or so nearly natural as to escape observation; the tongue clean; the skin cool or obscurely hot over the stomach and liver; the eye clear; and the entire aspect, to superficial observation, promising. Yet, in less than forty hours, the surgeon will be alarmed and confounded by black vomiting, soon followed by death. Although the patient will say, every time that he is visited, that he is better, and that, could he only eat, he would be well; on looking closely, it will be perceived that his answers do not always bear on the questions put; that amid his account of improvements, he never attempts to lift his head from the pillow till desired, and hurriedly lets it down again; that he dozes rather than sleeps, sighs frequently, and has difficulty in filling the lungs; and that the eye, though clear, is vacant, or fixed without an object."—*Memoirs of the West Indian Fever*, p. 8, *et seq.*

[1] Traité de la Fièvre Jaune. Par Jean Devèze.

# CHAPTER VI.

## MARCH AND DURATION.

SEC. I.—*March, or Type.* Yellow fever does not belong to the class or family of periodical diseases; it is not properly remittent, nor intermittent, in its type; *it is not marked by any obvious and regular series of recurrent phenomena.* The periodical element in pathology may sometimes be engrafted upon it, or mixed up with it, as happens occasionally with other diseases; but the two affections are essentially and fundamentally dissimilar. Upon this point most modern observers, I believe, are agreed, although many of the older writers maintained an opposite doctrine. This was the case especially with those who were zealously contending for the domestic and miasmatic origin of the disease. They conceived the cause they were advocating to be strengthened by every analogy and resemblance which they could discover between the two forms of disease; and this influence led many of them to adopt the doctrine that yellow fever is only an aggravated form or a *high grade*, as they call it, of ordinary remittent fever. It is well known that this was the opinion of Dr. Rush. He says that, in every case of the disease which came under his notice, there were remissions or intermissions of the fever, or of such symptoms as were substituted for the fever, generally occurring in the forenoon, and that these remissions were more evident than in the common bilious fever. I think, however, that a careful estimate of Dr. Rush's remarks upon this subject, with the aid of subsequent and more accurate investigations, will lead to the conclusion that his observations are not to be trusted. His description of the remissions is anything but clear and distinct; and when we take into consideration the extent to which his judgment was perverted, and his vision blinded, by his preposterous dogma of the *unity of disease*, it can hardly be considered

admitted the existence of a distinct disease, in the West Indies, usually showing itself in crowded ships, partaking of the character both of yellow and typhus fever, and, like the latter, contagious. It seems to me quite clear, that this disease was only the malignant or congestive form of true yellow fever.[1]

Sec. II.—*Stages.* But although there is no regularly recurrent or periodical element in yellow fever, the disease, in fatal cases, is marked by several very constant and striking *stages*, or *periods*, through which it passes with great regularity. These stages, or periods, are three in number, to wit: first the *febrile period*, or the *stage of excitement;* second, the *passive stage*, or *remission*, or the *stage of calm*, as Dr. Lewis calls it; and third, the *stage of collapse.* The first stage is marked by general febrile excitement, and it passes into the second with an abatement of the severity of the local pains, and of the fever. The second stage is marked, in addition to the change of symptoms just spoken of, by epigastric distress, nausea, and vomiting, and general restlessness, the latter commonly paroxysmal. The third stage usually commences with the black vomit, and is immediately followed by coldness of the extremities, yellowness of the surface, general sinking of the powers of life, and speedy death. In grave cases, terminating favorably, the period of remission, instead of passing into the stage of collapse, is followed by convalescence; and in the milder forms of the disease, it can hardly be said that there are any of the distinct stages, except the first. Dr. Lewis says: "The collapse stage is more marked and regular some years than others. In 1837, it was irregular; in 1839, it seldom failed to occur on the night of the fourth day, attended with immediate and striking evidences of sinking prostration; in 1843, it occurred between the beginning of the fourth and sixth day of the disease."[2] The duration of these several stages will be found, of course, to vary considerably in different cases and under different circumstances. The most positive information that I am able to find upon this point is derived from Dr. Lewis. "I have taken," he says, "twenty cases of epidemic fever, in which all these stages were well defined—the notes of

[1] Observations, etc., by Wm. Lempriere, vol. ii. p. 80.
[2] N. O. Med. and Surg. Journ., vol. i. p. 298.

many of them furnished by medical friends—and after a careful examination, I ascertained the average duration of each stage to be as follows: *fever*, twenty-two hours, *calm*, one hundred and twenty hours; *collapse*, fourteen hours."[1] Dr. Lewis says that, in the fever of 1847, the febrile stage was considerably longer; running on generally to about three days. Dr. Dickson says this stage may pass by in four hours, or it may last for sixty or seventy; its average duration being from thirty-six to forty-eight.[2] The three stages of yellow fever are very well described by Dr. Chisholm: "The history of the malignant pestilential fever," he says, "exhibits a very distinguishing character. We see in it a disease dispossessed of alternate paroxysms and remissions; and having in its progress three distinct periods or stages: the first characterizing an inflammatory diathesis of a peculiar nature, ushered in, generally, by a convulsive affection of the frame, or a sudden morbid excitement of the nervous system; the second, a kind of suspension of all the animal functions, accompanied with a more or less imperfect exercise of the mental faculties; and the third, a general sphacelus of the vital organs."[3] Dr. Mosely also makes the same division, and he speaks of the "*deceiving tranquillity*" of the second stage. In relation to the treatment, he remarks, that "it is in the beginning of this second stage, when attempts have failed or have been neglected in the inflammatory stage, that the great struggle is to be made between life and death."[4] Lempriere takes pains to call the disease a *continued* fever. Dr. Burnett says: "In many instances it proceeds through its whole course, bearing strictly the form of a continued fever; in others, there is a deceitful remission about the third day. But in by far the greater number of cases, though there are evening exacerbations, the remissions in the morning are so slight as scarcely to deserve that name. The most attentive observation, by myself, and others on whom I could rely, has failed to detect the distinct remissions ascribed to the disease by Dr. Cleghorn."[5]

According to Bally the duration of the first stage, in cases that are prolonged to the seventh day, varies from forty-eight to

[1] N. O. Med. and Surg. Journ., vol. i. p. 301.
[2] Dickson's Essays, &c., vol. i. p. 348.
[3] Chisholm's Essay, vol. i. p. 195.
[4] Mosely on Tropical Diseases, p. 436.
[5] Burnett on Med. Fever, p. 10.

seven patients were admitted into the Seminario Hospital, of whom one thousand two hundred and ninety-three died.[1]

At other times, and under other circumstances, the mortality is light. During the passage of the British store-ship Chichester from Jamaica to Halifax, in the months of October and November, 1802, there occurred one hundred and forty-one cases of yellow fever. Of the first *seventy-nine*, only *four* recovered; the remaining *sixty-two all* recovered! This enormous difference has been attributed to treatment; the first series having been treated by calomel, and the last by the lancet; but when it is recollected that the ship was sailing north, and had reached the 35th or 36th degree of latitude when the mortality began to abate; and when it is added, that the weather at this time became very stormy, with lightning and rain, we can hardly hesitate in referring to these latter circumstances, at least the principal agency in the production of the striking change which had taken place.[2] There are some facts mentioned by Dr. Lewis, of Mobile, showing the differences in the severity of the disease depending apparently upon the varying intensity of the poison, or the susceptibility of the subjects, or both. The fever of 1819, he says, in Mobile, respected no character of persons; the few whites, however, who survived, were acclimated. In the epidemic of 1837, the old resident, if attacked at all, generally recovered; in 1839, most of the citizens were attacked—the long resident very mildly, and the stranger severely. In 1842, the disease was anything but epidemic, and confined to the lower part of the city. Every person brought to the hospital this autumn, with yellow fever, was unacclimated; and the same thing was true of cases treated in private practice. Those which are called *sporadic cases*, occurring in healthy summers, are confined usually to persons who are strangers to the locality."[3] In a private letter from Dr. Lewis, dated September 26, 1847, speaking of the epidemic then prevailing in Mobile, he says it was principally remarkable for its light and ephemeral character. He estimates that there had already been about five hundred cases; less than forty of which had proved fatal; and nearly all of these occurred amongst strangers. Most of the cases were amongst the acclimated.

[1] O'Halloran on Yellow Fever, pp. 97, 99.

[2] Annual Register, 1802.

[3] N. O. Med. Journ., vol. i. p. 417.

But independent of these differences, depending upon the varying grades and character of the disease, there are certain circumstances and conditions, influencing more or less the termination of the disease, or indicating this termination. Amongst the *symptoms* which are looked upon as particularly unfavorable, are extreme restlessness, deep sighing, hiccough, suppression of urine, and especially black vomit. This latter is regarded, by general consent, as the precursor and harbinger, almost infallible, of death; and such it most frequently is, but not always. Many extensive observers allege that they have never seen a case of recovery, after the appearance of this symptom. Louis and Trousseau met with no such case at Gibraltar, in 1828. Dr. Rush makes a distinction between the true black vomit and the matter resembling coffee-grounds; and he says, that many patients who discharged this latter recovered. Dr. Lewis, of Mobile, says: "The recoveries after black vomit are exceedingly rare. I have ascertained, however, that *fourteen* patients were saved in 1843, after the appearance of this usually fatal symptom. So long as the vomit is thick and pasty, being raised in small quantities and thrown up mixed with natural mucus, the physician does not despair of his patient. The thin black fluid with the coffee-ground sediment is always, in Mobile, a fatal symptom. Four of the recoveries took place in the City Hospital, in charge of Dr. Ross; the others were the patients of different medical gentlemen in private practice."[1] Louis says, that recovery after black vomit occurs much more frequently amongst children than amongst adults.[2] Hemorrhage, I believe, is generally regarded as an unfavorable indication. Dr. Chisholm says, he never found it critical, nor were the local pains ever permanently relieved by it. According to Dr. Lewis, hemorrhage from the gums and nose, taking place previous to the occurrence of black vomit, is favorable; and in females, hemorrhage from the uterus did not, in any case under his care, terminate fatally.[3] Amongst the signs which Arejula considers as mortal, are the dark red or sub-livid color of the tongue, like that of a person after drinking red wine, with

[1] N. O. Med. Journ., vol. ii. p. 300.

[2] Mr. Doughty says he has seen many hundred cases of black vomit, and never knew a patient to survive where the matters thrown up from the stomach had the appearance of coffee-grounds.—*Doughty's Observations*, p. 14.

[3] N. O. Med. Journ., vol. i. p. 300.

mercy on the young and robust, to whom it proves highly fatal, as well as to pregnant women, whom it causes to miscarry, doubtless with a view to make up for the lenity with which it affects the fair sex in general."[1] Bally says those with a vigorous constitution suffer more than the feeble and delicate; but that this rule is not without qualification—that violent epidemics, like that which prevailed amongst the French soldiers, at St. Domingo, in 1802, and 1803, seize upon all alike, with very little distinction.[2] He adds that, in the torrid zone, death may be predicted with certainty in a person who is seized with the disease amidst the lassitude occasioned by coition; and that in Spain the mortality amongst the newly married, and libertines, is greater than amongst others.

[1] Burnett, p. 242.
[2] Du Typhus d'Amerique. Par Vr. Bally, p. 270.

# CHAPTER VIII.

## DIAGNOSIS.

A STRONGLY-marked case of fatal or grave yellow fever can hardly be confounded with any other disease. An initiatory chill of moderate duration and severity, immediately followed by intense pain in the head, back, and limbs; *redness and suffusion of the eyes;* moderate excitement of the circulation; moderate heat of the surface; loss of appetite; thirst; and a white tongue, with red tip and edges; these febrile symptoms, marking the first stage of the disease, continuing for one day or so, and then associated with, or followed by, epigastric pain and distress; nausea and vomiting; restlessness and anxiety, often more or less paroxysmal; and in from three to five or six days after the attack, by yellowness of the eyes and skin; vomiting of a matter resembling coffee-grounds held in a dark-colored fluid; very dark or black stools; coldness of the extremities; increasing and excessive restlessness, with occasional hiccough; hemorrhages from different parts of the body, and suppression of urine—the mind in many instances remaining clear to the end, and death taking place in from five to seven or eight days from the attack;—these phenomena, thus combined and thus following each other, constitute a disease which it seems impossible to mistake for any other. Asiatic cholera, puerperal peritonitis, and distinct smallpox are not more clearly and broadly marked, by their peculiar and characteristic physiognomy, than the yellow fever, occurring in this form; and had we not abundant evidence of the extent to which even clear heads and sound judgments may be mystified and perverted by hypothetical and *à priori* systems of medical philosophy, it would seem incredible that this disease should have been regarded by many observers as a variety merely of ordinary remittent fever. A single remark should be made in relation to the state of the organs after death, as an element in the diagnosis of fatal cases. The only phenomena peculiar to the disease are the change in the

color of the liver, and the presence of the matter of black vomit in the stomach and intestines. In cases where either or both of these are found, we have an additional and very conclusive evidence of the nature of the disease. It is very important, however, to add, that the absence of both these conditions is not to be taken as positive proof of the non-existence of the disease, in any given case, since it is quite certain that, in a considerable number of instances, death takes place without any formation of the matter of black vomit; and there is also good reason to believe that the change in the color of the liver is not a constant occurrence.

The diagnosis of the more moderate grades of the disease, including even the severer forms which terminate in recovery, may be somewhat less positive, perhaps, than that of the foregoing cases; but it cannot often be attended with any difficulty or doubt. It is very true, that some of the most striking features of the disease are often or usually wanting in these cases; there is frequently no yellowness of the skin, but slight restlessness, and epigastric distress, or none; and no black vomit; but the violence of the local pains, the early suffusion of the eyes, and the rapidity with which the disease passes from the second stage to convalescence and recovery, will be quite sufficient to supply their places, and to remove all uncertainty.

The diagnosis of the milder and slighter form of yellow fever must often be more or less qualified and doubtful; and it will depend in part upon the circumstances under which the disease occurs. Thus, if a considerable number of persons in the same family or neighborhood are attacked, during the prevalence of yellow fever, with pains in the head, back, and limbs, moderate febrile excitement and redness of the eyes—especially if these persons are mostly children, negroes, or individuals more or less acclimated, there can be but little doubt, if any, in regard to the character of the disease. Mr. Pym says: "The most characteristic symptom of the disease is *the peculiar pain in the forehead and eyeballs, with the drunken appearance of the eye.*"[1]

Again, the diagnosis may sometimes be rendered somewhat doubtful, by the presence of the remittent or periodical element in the disease. Dr. Lewis, of Mobile, has called the attention of

[1] Burnett, p. 209.

physicians particularly to these *mixed* cases, and to the difficulty which often attends their diagnosis. It does not appear, however, that the peculiar features of yellow fever are much modified, or the usual course of the disease much interfered with, by the addition of this periodical or remittent character. Dr. Lewis, in his description of the Mobile epidemic of 1843, says: "Some physicians complained that they were always taken by surprise in these cases; that there was no symptom which could lead them to suppose that they were cases of yellow fever; hence they viewed them as simple intermittent, running, under atmospheric influence, into black vomit. I was deceived in three cases only; two of which were under my treatment, and the other I saw by accident. After this, I was able to make a proper diagnosis, usually on the second or third day. During the apyrexia, there were the peculiar pulse and uneasiness belonging to the calm or passive stage of yellow fever; and in the absence of these, the eye or skin was sometimes indicative of the character of the disease."[1]

Finally, cases will unquestionably now and then occur, so indistinctly and obscurely marked, or so mixed up with other morbid phenomena—so anomalous and irregular in their symptomatological manifestations—as to escape the scrutiny of the closest and most experienced watcher. What is true of most other diseases is true also of this; and here as elsewhere in the domain of diagnosis, although as a general rule, and in an immense majority of cases, our conclusions may be absolute and positive, we are sometimes held to the necessity of being satisfied with such as are only qualified and approximative.

[1] N. O. Med. Journ., vol. i. p. 292.

# CHAPTER IX.

## THEORY.

THE theory of yellow fever, like that of the preceding diseases, can consist, at present, only of a few probable approximations. We may pretty safely say, in the first place, that it is not a simple gastritis. Notwithstanding the general presence and the grave character of the lesions of the gastric mucous surface in fatal cases, and the corresponding constancy and gravity of the gastric symptoms, it seems to me that a rational interpretation of all the phenomena of the disease leads inevitably to the conclusion above stated. The order of succession, in the phenomena of yellow fever, is not such as occurs in simple acute gastritis. The gastric symptoms do not accompany the general febrile excitement; the latter precedes the former. If the high fever of the first period is dependent upon gastritis, there should be at the same time some local symptoms of this latter. The first stage of the disease is not accompanied by any signs of gastric inflammation; and in mild cases, and not unfrequently also even in pretty severe cases which terminate in recovery, there are no such signs during any period of the disease. This could not be so generally the case, if the disease consists primarily and essentially in an inflammation of the mucous membrane of the stomach. The gastritis, there is every reason to believe, is a secondary lesion like that of Peyer's glands in typhoid fever, one of the results, immediate or remote, of the unknown poison of the disease. This interpretation is in no way inconsistent with the importance which I am disposed to attach to the local disease. This is probably one of the principal causes of danger and death.

Of the peculiar lesion of the liver, I have already sufficiently spoken. We know too little of its nature and relations, to justify us in attempting to estimate its importance, or to fix its position, in the theory of the disease to which it belongs.

It is very probable that a most important element in the patho-

logy of yellow fever is to be found in the alteration of the blood which has already been described. The etiological poison of the disease, received into the system, works a morbid change of some sort in this fluid, the immediate effects of which are manifested in the first stage of the disease; in mild and moderate cases, these effects are carried no further; but in grave and fatal cases there are superadded to the contamination of the blood, certain consecutive local lesions, especially of the liver, and the mucous membrane of the stomach.

# CHAPTER X.

## TREATMENT.

SEC. I—*Preliminary.* The treatment of yellow fever is not yet settled. The conflicting opinions, which we have so often encountered in the course of our previous investigations, again meet us here. I do not mean to say that there are not now, or that there have not always been individual practitioners, thoroughly believing and confidently proclaiming that they themselves had ascertained the best and most effectual means of combating and controlling this disease—of diminishing its severity, and preventing its fatal issue. There are now, and there always have been, multitudes of such. It is, indeed, a very remarkable fact that in no department of practical medicine have loftier pretensions been made than in this; nowhere else has there been claimed a more entire and absolute control over disease than here. Medical skill has plumed itself upon its most brilliant successes; medical art has proclaimed its most wonderful power, in the treatment of yellow fever. Dr. Rush said that, during the great Philadelphia epidemic of 1793, at no time did he fairly lose more than one in twenty of his patients; and a like siren accompaniment runs through the long and stormy annals of the disease. But still, yellow fever has lost none of its ancient terrors; the blow with which it strikes down its victim, to-day, in New Orleans, is as unerring and resistless as it was half a century ago at Cadiz or Gibraltar. Neither is there any general agreement amongst medical men in regard to the most effectual means for controlling the disease; one method is recommended by one observer, another by a second, and another by a third. These are the grounds for the statement with which I have commenced this chapter—that the treatment of yellow fever is not yet settled.

Under such circumstances, the duties of a conscientious historian of the disease, although they may be difficult, are sufficiently plain. He is not to dogmatize; and he is to be especially

careful not to espouse opinions of an exclusive, partisan, and doubtful character. His functions are those of the judge, and not those of the advocate; he is carefully to examine and analyze the evidence before him, and honestly to estimate its value, and then, as nearly and as fully as his means and ability will enable him, he is to state the case *as it is*—clearly and fairly, without prejudice and without passion.

In the further prosecution of this subject, I shall first speak of the three remedies which have attracted most attention, and which have been most extensively used—I mean, *mercurials; bleeding; and tonics, or stimulants;* and I shall then mention some other methods of treatment that have been adopted by certain practitioners.

Sec. II.—*Mercurials.* By the mercurial treatment of yellow fever, I mean the use of mercury for the purpose of producing its specific effects on the system, as indicated by the presence of salivation. This practice constituted the favorite method of many British, and of some few American, physicians; and it has been long and very extensively applied. One of its earliest and most zealous champions was Dr. Chisholm. He placed his sole reliance upon it for the cure of the disease. His usual mode of administering it was to give ten grains of calomel, either alone, or in combination with jalap, at the beginning of the disease, and then to repeat the calomel, either alone, or in combination with opium, every three hours, until the salivary glands became affected; which generally happened, he says, in less than twenty-four hours from the commencement of the treatment. Dr. Chisholm speaks of this treatment as *new;* says that he resorted to it, not on the authority of others, but led by his own reflections on the nature of the disease, and by the inefficacy of the means which he had already made use of; and he always speaks of his success as astonishing as it was gratifying.[1] Dr. Gillkrest enu-

[1] In a subsequent part of his work, Dr. Chisholm justifies his free use of mercury, by showing that the practice was not new in the treatment of the West India yellow fever; but that it had been extensively adopted near the middle of the then century. Dr. Bancroft quotes Dr. Henry Warren, as saying, in 1740, after alluding to what he calls a very odd and unwarrantable practice which had prevailed for many years among several of the plantation practitioners of Barbadoes, of giving calomel in inflammatory fevers, that he had never yet heard of mercury being given in this malady, and hoped he never should hear of it.—*Bancroft's Essay*, p. 77.

merates a great number of British practitioners who still rely upon this method; and he gives to it the sanction of his own experience. Amongst American physicians of the present day, who adopt a similar practice, the most distinguished is Professor Dickson, late of the New York University, and now of Charleston, S. C. Dr. Dickson has been long familiar with yellow fever, and he gives his most emphatic and unqualified testimony to the excellence and superiority of this method. Still, it can hardly be denied, that the balance of authority is on the other side of this question. Nearly all the French and Spanish, most of the American, and many of the British physicians, now doubt the value of this mode of treatment; or they are decidedly opposed to it. Dr. Burnett says: "I have heard of the utility attending the exhibition of mercury in this disease; but I can with truth affirm that, employed in any other shape than as a purgative, I have never seen it in the early stage attended with the smallest advantage." He sailed, he says, for Jamaica, in 1802, strongly prepossessed in favor of mercury, but a service of nearly a year and a half on that station served to convince him that he had greatly overrated its virtues. Without particular reference to the many patients who perished around him, in the ships, and the hospitals, four of his most intimate friends died under the use of mercury, one of them fully salivated. In protracted cases, with signs of cerebral disease, he thinks it of great service, in small doses.

Mr. Doughty says: "In our hospital, which I have stated was soon crowded, and with cases of the most aggravated nature, the mercurial plan of treatment was for a time tried, but with no success, as in seven cases out of ten the mouth could not be affected; where the mercurial action did manifest itself, the patient was considered safe; but this effect was so uncertain, that I shall never be led to adopt it again, as a general plan, should any circumstance induce me to revisit the West Indies."

Sir James Fellowes, in a notice of the epidemic at Cadiz in 1813, says: "Mr. Short, the surgeon of the German battalion, informed me, that five soldiers were taken ill whilst under a state of ptyalism, from the use of mercury. They all recovered. Mercury, in the hands of Staff-Surgeon Vance, proved to be of no use, except as a purgative in the beginning of the disease."[1]

[1] Reports, etc., by Sir J. Fellowes, p. 300.

Dr. Bancroft says: "I cannot, with an eminent and respectable physician, Dr. Grant, who treats of this practice, aver, that although I have been called in to attend many under such circumstances, *not one* survived, and that they became more victims to the mercury than even to the fever; but I can aver, that I had not a few opportunities of observing the effects of mercury given in this disease, while I served, in 1796 and 1797, as physician to the army, under Sir Ralph Abercrombie, in the West Indies, and that I saw nothing, which, to my understanding, could afford a proper encouragement to continue the mercurial practice; and therefore though I have adopted no invincible, nor as I hope unreasonable prejudice on the subject, I cannot venture to recommend the use of mercury to excite salivation in yellow fever, without further evidence of its utility."[1] Louis says there was no reason to think that the mercurial practice was of any utility in the yellow fever of 1828, at Gibraltar.

SEC. III.—*Antiphlogistic Method.* Early and free general bloodletting, with or without the local abstraction of blood from the head, or epigastrium, or both, has constituted a common and favorite mode of treatment with many practitioners. Our distinguished countryman, Dr. Rush, it is well known, was one of the staunchest champions of the lancet in yellow fever. He stood by it, through evil and through good report, with a tenacity and determination characteristic of the polemics of our profession. In his account of the fever of 1794, in Philadelphia, he gives a tabular statement of his bleedings, in twenty-three cases. The number of bleedings, in each case, varied from three to fifteen; in more than half the cases, he bled nine times, or more! The quantity of blood taken from each patient varied from fifty to one hundred and fifty ounces—the average quantity being ninety-three and a half ounces![2] In 1797, Dr. Dewees is said to have bled Dr. Physick, in yellow fever, to the extent of one hundred and seventy-six ounces.[3] One of the boldest bleeders was Dr. Robert Jackson, the Englishman, in his practice in the West Indies. His common quantity was from three to six pints, taken suddenly, and at once. His treatment was founded on *à priori* notions, and has nothing but general assertions to justify it. Dr. William Burnett,

[1] Bancroft's Essay, p. 85. [2] Med. Inq., vol. iii. p. 221. [3] Ibid., vol. iv. p. 22.

who was at the head of the Medical Department of the British Navy in the Mediterranean, from 1810 to 1813, regarded yellow fever in its early stages as purely inflammatory. The disease, he says, is then simple in its nature, and easily to be managed; and the fate of the patient is in the hands of the physician. He relied principally on bloodletting, general and local. He says that although syncope is often occasioned by the loss of a few ounces of blood, the bleeding should be repeated, if it is not specially contraindicated—the patient being placed in a horizontal position. He lays great stress on the value of bleeding from the temporal artery; he says the headache is greatly ameliorated, if not entirely removed, by this operation, and that in many instances the patients feel the pain escaping with the blood. In one case, he bled from the temporal artery to the amount of ninety ounces. In many instances, he bled to the amount of one hundred and thirty, one hundred and forty, and even two hundred ounces.[1]

An interesting, and as far as it goes a very conclusive trial of the comparative merits of the antiphlogistic and mercurial methods of treatment, was made during the years 1828, 1829, and 1830, on board some of the United States vessels, in the neighborhood of the West Indies, and in the hospital at Pensacola. On board the Hornet, there were fifty-five cases, and eight deaths. The first twenty-six were treated on the mercurial plan; and five of them were fatal: the remaining twenty-nine were treated on a different plan; and three of them were fatal. Of the few who were bled, every one recovered. In the Grampus, there were thirty-six cases and four deaths. The treatment, generally, was pretty actively antiphlogistic. There was no death after venesection. From the Peacock, there were sent to the hospital, at Pensacola, thirty-eight patients, nine of whom died. The treatment in the hospital was mercurial; but on board ship it was antiphlogistic. Of the nine fatal cases, eight were treated with mercury, of whom five were salivated, or had the mouth affected. The average duration of the disease, including convalescence, was about one week greater in those treated by the mercurial than in those treated by the non-mercurial method.

I could add largely to these testimonials in favor of the value of bloodletting. It is true, nevertheless, that the practice is very

[1] Burnett on Med. Fever, p. 19. [2] Amer. Journ. Med. Sci., Aug. 1833.

far from being generally adopted, and it has always encountered very strong and decided opposition. This bold depleting practice has failed to commend itself to the general favor of the profession; we may go further than this, and say that it is generally rejected as improper and unsafe. Dr. Chisholm says that, in young and robust subjects, newly arrived, and with strongly-marked inflammatory symptoms, one plentiful bleeding may be of infinite service; but, as a general practice, he condemns it in the strongest and most unqualified terms. Not a single case, he says, in which bleeding has been employed as a principal remedy, has terminated favorably. Sir James Fellowes says: "As far as my information extends, the practice of bleeding has been of late entirely laid aside in Spain in the treatment of this fever; and although I have seen some patients recover in the few instances in which it had been followed, it did not appear to be necessary or proper."[1] Sir Gilbert Blane says: "With regard to bloodletting, the most that can be said in its favor is, that, if there should be a hard, throbbing pulse, with violent pain in the head and back, it is *safe*, in the first twelve hours. It is, however, in all cases extremely dangerous, except in the circumstances just mentioned."[2] The leading practitioners of Mobile reject it almost entirely. Dr. Dickson does the same.

As a means of reducing the active excitement of the first stage, and as a substitute, in some degree, for bloodletting, the cold affusion has been made use of. Dr. Dickson praises it very highly. "Relief from the pungent heat of the skin," he says, "the tormenting thirst, the distressing headache, the pain and irritability of stomach, you will never fail to procure. This relief, it is true, will be partial and transient, but the remedy may be repeated as often as seems requisite, without danger or injury. The termination of the chill, if there be one, when the face becomes flushed, and the surface dry and hot, a condition almost characteristic in the degree attending this form of fever, is the moment for affusion. Seat your patient in a convenient vessel, and pour rapidly from some slight elevation, upon his head and shoulders, and over his naked body, a full large stream of cold water, continuing it until his face becomes pale, or his pulse sinks. In general, the sick man himself will exult in the delightful ease which follows it, and

[1] Reports, etc., by Sir J. Fellowes, p. 407. [2] Obs. Dis. Seamen, p. 414.

will solicit its frequent repetition. I have never yet seen any unpleasant consequences from it. Even children and timid women reconcile themselves readily to the shock of the affusion, and regard it as pleasurable rather than otherwise. The surface should be rubbed dry, and the patient, on lying down, covered so as to be comfortably warm."[1]

SEC. IV.—*Cinchona; Tonics and Stimulants.* There have always been a certain number of practitioners who have pursued a decidedly tonic and stimulating course in the management of yellow fever, even from the commencement of the disease. Dr. Lafuente, a Spaniard, was in the habit of giving six or eight ounces of Peruvian bark during the first forty-eight hours of the disease; and this practice, with certain modifications, still finds some advocates and disciples. I do not think there is any satisfactory evidence of its efficacy; although it is very possible that it may be useful in those cases of the disease which are complicated with the pathological element of periodicity. I am not now speaking of the use of cordials and stimulants during the second and third stages of the disease. These remedies are very generally resorted to at this period.

SEC. V.—*Purgatives.* There is a pretty uniform agreement amongst practitioners in regard to the propriety and advantages of an early and efficient cathartic in the treatment of yellow fever. Different articles are used by different physicians; as a general rule, Spanish and French practitioners preferring the milder and blander laxatives, while British and American physicians usually resort to calomel in combination with or followed by some other purgative. Dr. Rush's famous powders of calomel and jalap, are well known. Dr. Dickson promotes the action of the calomel by the use of Epsom salts.

SEC. VI.—*Spanish Method.* Yellow fever prevails nowhere more extensively than along the Mediterranean coasts of Spain, and it can hardly fail to be of some interest to my readers to know the plan of treatment generally adopted by the Spanish physicians. This plan, with the exception of the ultra bark treatment

[1] Dickson's Essays, &c., vol. i. p. 360.

of Fuente, is pretty uniform; and consists principally in the use of mild and cooling laxatives, such as supertartrate of potass and tamarind water, with subacid drinks, in the early stages of the disease, and cinchona in the latter period. There is a general aversion, amongst the Spanish practitioners, to the lancet and mercury. Dr. Flores, at Cadiz, in 1813, at his first visit, which was usually in the evening or night, ordered an injection of sweet oil, warm aromatic drinks, and sinapisms to the feet. The next morning, he gave ten grains each of calomel and jalap, with barley water, or light broth, promoting their action, if necessary, by enemata. If vomiting was present, the calomel was given in divided doses, in pills, and continued till it operated on the bowels. Its free action was generally followed by relief—general tranquillity, mitigation of local pains, and perspiration. On the approach of the third stage, tincture of cinchona, animal broths, sago and wine, were resorted to. If there were threatenings of black vomit, a vinegar and mustard poultice was applied to the epigastrium, saline injections were administered, and sweet spirits of nitre and opium were added to the bark and cordials. The practice of Sir James Fellowes was much the same.

Sec. VII.—*Mobile Method.* According to Dr. P. H. Lewis, the physicians of Mobile have, with great unanimity, adopted a method of treatment corresponding pretty nearly to the foregoing. He speaks especially of the severe and malignant forms of the disease—milder cases generally recovering under various and even opposite systems of management. In the early stage, they give a dose of calomel, followed by castor or olive oil, or salts and senna, so as to act freely upon the bowels. If the rigors continue long, a warm mustard-bath is ordered. Perspiration is promoted by warm drinks; and cups are applied to the cervical or epigastric region, as they seem to be indicated. In the second or stage of calm, *no active system of practice is pursued.* The lighter diffusible stimulants and diaphoretics are usually given, with blue pill. The transition of the disease from the second to the third stage is carefully watched, and met with *an active stimulating treatment.* Brandy toddy or julep is usually preferred. It is cautiously given, until it is ascertained that the patient has a relish for it; after which it is pressed until the depressing tendency of the disease is fully arrested. After the restlessness

has moderated, and the pulse rallied, the stimuli are continued in such quantities as are necessary to sustain the patient. After the liberal use of brandy, small quantities of chicken or oyster broth are cautiously given; if this should also be retained by the stomach, the fears of the approach of black vomit, which were previously entertained, begin to fade away. General bleeding, in this class of cases, is considered improper and hurtful. It is resorted to only in the febrile stage of the open inflammatory form of the disease, and is even then used cautiously. But small reliance is placed upon quinine. "No physician in Mobile, who has any experience, expects to *cut short* a grave and serious case of yellow fever." My readers can hardly fail to be struck with the almost exact similarity between the Spanish and the Mobile methods of treatment.

Dr. Nott of Mobile has for several years been in the habit of administering creosote *during the febrile stage.* After opening the bowels, he puts twenty drops of creosote to six ounces of spirit of Mindererus, with alcohol enough to dissolve the creosote; and then gives half an ounce every two hours. Dr. Lewis says of this remedy: "It is certainly the most efficacious means for arresting the disposition to vomit and retch that I have yet found."

SEC. VIII.—*Prophylactics.* There can be no doubt, I suppose, that the most effectual means of warding off the disease from those who have been exposed to its essential cause, are to be found in cleanliness, temperance, and cheerfulness. The two former conditions it is not difficult to comply with; but according to what code of metaphysics or philosophy, the solemn warnings to men, standing in the very shadow of the wings of the angel of pestilence, to be of good heart, and not afraid—*and this too at the peril of their lives*—are expected to be heeded, is more than I am able to understand. In connection with the prevention of the disease on shipboard, Dr. Barrington says: "The chloride of lime is an important agent in purifying places inaccessible by the scrubbing-brush and holy-stone, and destroying the noxious effluvia of crowded apartments. That it is highly useful on shipboard has been sufficiently demonstrated. It is now in general use in the West India squadron. In the late cruise of the Erie, this article was dealt out unsparingly, and occasionally to the temporary annoyance of those on board; and I am convinced that

to this, with the prompt and effective co-operation of the executive officer, in having every tangible part kept free from filth, may be chiefly attributed that ship's escape from the most alarming disease of the tropics. The chloride mixed with water was poured into the pump-wells, and distributed throughout the holds, chain-lockers, berth-deck, and other parts." "Music," continues the same sensible writer, "though not often regarded as a preventive, is in my opinion an important mean of placing the system, through the influence of the common sensorium, in a favorable condition to resist the action of the morbific causes. Smoking tobacco must also be enumerated amongst the means of keeping off attacks of fever in what are called miasmatic situations. In an infected atmosphere, particularly at night, I have seen and experienced sufficient not to doubt its utility."[1]

SEC. IX.—*Conclusion.* I shall finish this chapter with the following conclusions, which we are justified, I think, in adopting.

*The simple and milder form of yellow fever, occurring sometimes in unacclimated adults, but more frequently amongst the acclimated or partially acclimated, and in children, usually terminates favorably, independent of any of the ordinary modes of treatment. Perhaps this termination is promoted by a mild but efficient cathartic.*

*The open inflammatory form of the disease is mitigated in severity, and its danger diminished, by prompt and pretty free bloodletting—general and local; and by an efficient cathartic.*

*The congestive form of the disease, and the other forms, if they pass into the stage of collapse, usually terminate fatally, and are but little under the control of art. In these cases, the method of treatment usually followed by Spanish practitioners, and adopted by the physicians of Mobile, seems to promise more success than any other.*

Finally, and lest some of my friends may think me over cautious in my conclusions, I shall add to what I have said the seal of hoary wisdom, and the sanction of ripe knowledge. Lempriere says: "I am very apprehensive, from experience, that both parties have been too sanguine in their practice, and that many of the successful cases have been confounded with the common

[1] Amer. Journ. Med. Sci., Aug. 1833.

remittent; and that as yet we have not ascertained what is the most judicious mode of treating the disease; and I am likewise convinced that there are many cases which from the first attack are fatal, and which from their nature totally exclude the chance of recovery by medicine."[1]

Let us listen to the great Sir Gilbert Blane. He says: "I feel this as the most painful and discouraging part of this work, the yellow fever being one of the most fatal diseases to which the human body is subject, and in which human art is the most unavailing.

"It seems hardly to admit of a doubt that there are particular instances of disease in their own nature *determinedly fatal;* that is, in which the animal functions are from the beginning so deranged, that there are no possible means in nature capable of controlling that series of morbid motions which lead to dissolution. Of this kind appear to be the greatest number of cases of the plague, many of the malignant smallpox, and some of fevers, particularly of that kind now under consideration."[2]

[1] Obs. Dis. Army. Lempriere, vol. ii. p. 92. [2] Obs. Dis. Seamen, p. 411.

# CHAPTER XI.

## DEFINITION.

YELLOW FEVER is an acute affection; occurring at all ages, but much more frequently during the middle and active period of life, than either earlier or later; attacking, in a large majority of instances, persons who are not permanent residents in the places where it prevails—sometimes extending, however, especially in localities where it is of rare occurrence, to such residents; rarely occurring twice in the same person; much more common in the white than the negro race; generally milder in its character amongst children and women than amongst men; confined to certain geographical localities, and especially to commercial seaports in hot climates; prevailing most extensively during the latter part of the hot season; often epidemic, but sometimes sporadic in its appearance; not capable of transmission from one person to another in a pure atmosphere; depending, for its essential cause, upon a poison, of terrestrial origin, the nature and composition of which are entirely unknown—which poison may be shut up in small and close apartments, in clothes, bedding, and so on, and transported from one place to another, and which is destroyed by a freezing temperature: sudden in its access; commencing with an initiatory chill, ordinarily of moderate severity, and of short duration; the latter accompanied with acute and violent pains in the head, back, and limbs, or immediately followed by them; then by a red suffusion of the eyes, moderate heat of the skin, and moderate acceleration of the pulse, loss of appetite, and thirst; a moist, white, villous tongue, with rosy tip and edges;—these febrile phenomena diminishing in activity, and mostly disappearing, in from twenty to thirty-six hours;—the first stage of the disease, thus characterized, passing, in mild cases, into convalescence, but in grave cases being followed, after an interval of apparent but deceptive amelioration, by nausea and vomiting—the matter ejected from the stomach, in cases

that are to terminate fatally, resembling coffee-grounds; black or dark-colored stools; epigastric distress, general restlessness, and jactitation; sighing respiration; hiccough; a yellow color of the skin; coldness of the extremities gradually extending to the trunk; and, finally, by death;—the mind usually remaining free, but apathetic and indifferent, up to the close of life; which symptoms differ very widely in their degree of severity, and especially in their number and combination, in different cases, thus giving rise to different varieties and grades of the disease; which symptoms, furthermore, may either subside and disappear, in the course of a few days from the time of their commencement, or may terminate with death, between the third and seventh day of the disease; the bodies of patients exhibiting, on examination after death, in most cases, a yellow or buff color of the liver, with dryness of its tissue; black spots or masses, more or less numerous, in the lungs; softness and flabbiness of the substance of the heart; and in nearly all cases, unusual thinness and fluidity of the blood; and redness, mamellonation, changes in the thickness, and softening—one or more—of the mucous membrane of the stomach; this organ and the intestines usually containing a considerable quantity of a very dark or black fluid or semi-fluid matter; which disease differs essentially from all others, in its causes, its symptoms, and its lesions; and is only to a moderate extent, at least in its graver forms, under the control of art.

# CHAPTER XII.

## BIBLIOGRAPHY.

My readers will not expect me to attempt to embrace in a short supplementary chapter, like this, the almost boundless domain of the literature of yellow fever. I shall content myself with doing here what I have done in the corresponding portions of the preceding parts of my book;—I shall enumerate merely some few of the publications upon yellow fever, confining myself mostly to those of original pretensions, and from which the materials for the foregoing history have been mainly derived. It is proper that I should here express my acknowledgments to Dr. La Roche, for the free use which he has given me of his very elegant and complete library of this disease.

*Observations on the Diseases incident to Seamen. By Gilbert Blane, M. D., F. R. S., etc. London*, 1785. Sir Gilbert Blane was surgeon to the great British fleet, under Admiral Rodney and Lord Hood, during the French, Spanish, and American war, from 1779 to 1783. The fleet consisted of from twenty to forty ships of the line—the whole force sometimes amounting to more than twenty thousand men. The principal theatre of its operations was the neighborhood of the West India Islands, although portions of the fleet were occasionally passing to and fro, between the Islands, and North America and Great Britain. Sir Gilbert Blane's volume, of five hundred pages, is mostly made up of a medical history of the fleet, and of separate treatises on what he calls "*the three sea epidemics*"—*fever*, *scurvy*, and *dysentery*. This work, like all the writings of Blane, is marked throughout by sound common sense, accurate observation, clear-headed sagacity, and the most thoroughly positive and correct medical philosophy. It is deplorable that this philosophy is so rarely found in the works of his countrymen. Some notion of the extent of Blane's experience, as well as of the terrible destructiveness of the service to which he was attached, may be gained from the

statement that, in the period of *three years and three months*, the number of deaths, in the fleet and hospitals, amounted to *four thousand three hundred and forty-eight;* of this number, *three thousand and two hundred perished from disease.* Upwards of three thousand were also lost at sea, in the hurricane of October, 1780, and in the storm of September, 1782. The descriptions of yellow fever, and of bilious remittent fever, are short, but clearly, accurately, and excellently written; and many of his observations have been incorporated into my book.

*Dr. William Hillary's Observations on the Weather and the Diseases of the Island of Barbadoes* is a most excellent and sensible book. His description of yellow fever is wonderfully graphic and true. He thought the disease was not contagious, except, perhaps, in some rare cases. His treatment consisted in early moderate bleeding, followed by mild purges, diluent drinks, and, in the latter periods, by stimuli and cordials. "This method," he says, "has been and may probably be thought by some others too simple and easy to conquer so violent and formidable a disease. What! only bleed once or twice, and give a little warm water, and two or three simple purges, and this simple julep, to subdue such a terrible disease! without any fine boluses, cordial volatiles, and vesicatories! But I must tell such persons that the more simple the method is, if it be but judiciously and fitly adapted to the nature and cause of the disease, it is so much the better."[1] One hardly knows what to make of his statement that in a practice of eight years he had seen only two patients, treated in this manner, die! The American edition contains no clue to the period of time during which the observations were made, but as an offset to this and all other omissions, it is well barnacled over with notes by its illustrious editor.

*A Treatise on Tropical Diseases, etc. By Benjamin Mosely, M. D. London.* Dr. Mosely's work was first published in 1787; thus preceding, by several years, the great epidemic period of yellow fever which commenced in 1793. It is quite miscellaneous in its contents;—containing remarks on military operations in the West Indies; on dysentery; on the *endemial causus*, as he calls it, or yellow fever; on tetanus, and other diseases; and, finally, on the influence of the moon. I know nothing of the

[1] Rush's Hillary, p. 125.

personal history or character of Dr. Mosely; but his book, notwithstanding its faults—its lumber of learning, its parade of ancient error and credulity, and its want of method—is one of the raciest, freshest, and most entertaining, in medical literature. Dr. Mosely expresses his disbelief in the contagiousness of all forms of pestilential fever. He looks upon yellow fever as totally different from the bilious remittent. His description of the disease is short, but exceedingly vivid and striking. His treatment was by free and repeated bleeding, at the commencement, followed by the warm bath, and saline purges, diaphoretics, and large quantities of cinchona. In the second stage, he insists upon the necessity of still further purging.

*Observations on the Diseases of the Army in Jamaica, etc. By John Hunter, M. D., F. R. S., etc. London*, 1788: pp. 315. Dr. Hunter had the care of the British Military Hospitals in the island of Jamaica, from 1781, to 1783; and this little book contains the results of his medical experience, during this period of time. The work is marked throughout by close observation and sound sense; although it adds but little to our knowledge of yellow fever. He did not regard the disease as essentially different from bilious fever; and he saw no evidences of its transmissibility by contagion.

*Practical Observations on the Diseases of the Army in Jamaica, etc. By William Lempriere. London*, 1799. 2 vols., pp. 652. Lempriere was regimental surgeon, and superintendent of the military hospitals, in Jamaica, from 1792 to 1797. His book is well and sensibly written. He calls yellow fever *tropical continued fever;* recognizes and insists upon its essential unlikeness to bilious remittent fever, and denies its contagiousness. His description of the disease is very good. His treatment consisted mostly in the warm bath, a mercurial purgative, and cinchona. His chapter on the pathology of yellow fever is wholly hypothetical and speculative, and of no value whatever.

*An Essay on the Malignant Pestilential Fever, introduced into the West Indian Islands, from Boullam, on the Coast of Guinea, as it appeared in* 1793, 1794, 1795, *and* 1796, *etc. etc. By C. Chisholm, M. D.* Dr. Chisholm was a resident at Grenada during the prevalence in that island of the disease which he describes. He may be looked upon as the leader of the contagionists, and he was one of the most earnest advocates of the mercurial

treatment of yellow fever. His account of the introduction of the disease into Grenada has already been given. His description of the disease is anything but clear and complete. He looked upon the new fever as essentially distinct from the ordinary yellow fever of the West Indies; and he seems to have been constantly haunted by the notion of its close resemblance to the Oriental plague.[1] His work constitutes an interesting portion of the history and literature of yellow fever, notwithstanding its incompleteness and one-sidedness.[2] The distinctions which he endeavors to make out between the two diseases are altogether fanciful, as well as his speculations upon their causes. His treatment was founded upon what he calls *reasoning* and *reflection.*

*A Sketch of the History and Cure of Febrile Diseases in the West Indies. By Robert Jackson, M. D. London,* 1820. 2 vols. 2d ed. There is hardly any work on the diseases of the West Indies which has enjoyed a more extensive celebrity than this; and there is none which has less real value. There are some indications in it of good sense; but its leading characteristics are

[1] After pointing out this resemblance in detail, the Doctor winds up with the very sage and satisfactory conclusion, that yellow fever is quite like the plague, *except that it does not always exhibit the symptoms of the latter malady!*

[2] There is a good deal of inherent evidence in Dr. Chisholm's book, that much of what he says is to be taken with some grains, at least, of allowance; even when he supposes himself to be relying upon the clear evidence of his own senses. In his account of the first autopsy that he made, he says: "The upper part of the cranium, on being sawed and prised up by a chisel, was so pressed from inwards by the distension of the cerebrum as to fly off, or separate in such a manner as if a spring from within acted upon it." The worthy Doctor believed, also, in the existence of the *mermaid*, with all the interesting and lady-like qualities usually assigned to her; the head, like that of the human species, but rather smaller, sometimes bare, but oftener covered with an abundance of long, black hair; the shoulders broad, and the breast large, and well formed; the tail, fish-like, and forked, and so on. These creatures were generally seen in a sitting posture in the water, their tails, very properly, out of sight; and always employed in smoothing their hair, or stroking their breasts and faces with their hands. They are held in great veneration by the natives, and this is the reason that none of them have ever been shot. Such is the account which a Mr. Van Battenburgh gave to Dr. Chisholm, and which greatly diminished the skepticism of the latter in regard to this subject. —*Chisholm's Essay*, vol. ii. p. 192. The Doctor thinks it not a little singular, that, in yellow fever, a very distressed feeling about *the heart*—probably a *smothering of the heart*—should be peculiar to the natives of Ireland! Some notion of Dr. Chisholm's skill in diagnosis may be derived from the fact of his describing what he calls an *Epidemic Polypus*, prevailing at Grenada, and characterized by the presence of long polypi in the heart and large bloodvessels.

these—a wretched want of all diagnosis; a spurious and miserable medical philosophy; an extravagant system of practice; and, running through the whole, an utterly unmeaning or unintelligible jargon. Dr. Jackson's medical philosophy appertains to the same school and class as that of Dr. Rush. He calls yellow fever pneumonia, scrofula, and chronic ulcers of the legs; *forms*, merely, of febrile disease—a kind of *pathological unitarianism* that would have delighted the heart of the great American.

*The second volume of Dr. Rush's Medical Inquiries* is mostly devoted to the yellow fever. The author was one of the leading medical men in the city of Philadelphia, during the prevalence of the disease there, in 1793, and subsequently; he studied it with zeal and enthusiasm; he took a very prominent part in the discussions which arose, especially in regard to its causes, and its treatment; and his high position and wide reputation gave to his opinions great weight and authority. His account of the epidemic of 1793 occupies more than one hundred and fifty pages. It is immethodical and fragmentary; but it contains much valuable material for the history of the disease, and will always be read with interest and instruction. At the commencement of the epidemic, Dr. Rush adopted the treatment recommended by Dr. Stevens, by Peruvian bark, and the cold affusion. Three out of four of his patients died. He meditated and studied; and the first rays of the true light, as he regarded it, seem to have been derived from a manuscript account of the yellow fever of Virginia, in 1741. He now began the use of calomel and jalap, and four of his first five patients recovered. He assured his fellow-citizens, that the disease was no longer incurable. He soon added to this treatment bleeding, cool air, cold drinks, low diet, and cold water externally. "Never before," exclaims the enthusiastic philanthropist, "did I experience such sublime joy as I now felt in contemplating the success of my remedies. It repaid me for all the toils and studies of my life." The most lamentable defect in these histories of the yellow fever consists in the absence of all accurate diagnosis. A case of ordinary menorrhagia, or colic, is called *a form* of yellow fever! This defect, with a most unphilosophical passion for hasty and unwarrantable generalization, takes away much of the value which these histories would otherwise possess.

*A Short Account of the Malignant Fever, lately prevalent in Philadelphia, etc. etc. By Matthew Carey. 4th ed. Philadelphia*, 1794. This is an interesting history—moral, social, and statistical, rather than medical, of the epidemic of 1793, written by a sensible and judicious man, not of the profession. The picture of the scene is very vividly and graphically drawn —the common picture of pestilence, with its shapes of darkness, and its shapes of light; abject terror, selfishness, and inhumanity, strangely mingling and contrasting with the boldest courage, self-forgetfulness, and love stronger than death. A large hospital was established at Bush Hill. It was crowded with the sick and dying, whose perils and sufferings were increased for want of suitable nurses and attendants. Amongst those whose personal services were voluntarily offered, was a rich merchant, a native of France. He took charge of the sick wards; reformed the whole character of the service; encouraged and solaced the patients; held the cup to their parched lips; wiped the cold sweat from their pale foreheads; and shrunk from no menial office that could mitigate or soften their distresses. This was Stephen Girard; and this simple memorial of him, in the pages of Mr. Carey, is a nobler and prouder monument to his memory, than that marble temple—magnificent and beautiful as it is—which now bears his name.

*Memoirs of the Yellow Fever of Philadelphia in* 1798. *By William Currie. Philadelphia*, 1798. This is a kind of desultory diary of the yellow-fever visitation of 1798—a record, from day to day, of some of the principal events and incidents of the epidemic. Although public attention and medical research have been more particularly directed to the Philadelphia fever of 1793, it appears that the epidemic of 1798 was absolutely nearly as destructive as the former, and relatively much more so. The disease, in the latter year, was more malignant and fatal than in the former; the total mortality was nearly four thousand; although three-quarters of the inhabitants are estimated to have left the city. This year the disease prevailed more generally along the northern than along the southern coast. Dr. Rush has a letter in the book, referring fatal cases to *the stagnation of acrid bile in the gall-bladder, or its close adherence to the upper bowels;* and recommending *an artificial cholera morbus, excited about the fourth day of the fever, by shaking the gall-bladder and bowels, and discharg-*

*ing their contents, with tartar-emetic, gamboge, jalap, and calomel, and perhaps Turpeth mineral!* "As there is a blistering point," says the *philosophical* doctor, "in all fevers, so there appears to be an *emetic point* in the yellow fever!" Dr. Currie thinks that the fever was introduced into Philadelphia, in the ship Deborah, from the West Indies. "The contagious nature of the fever," he says, "is acknowledged by all, excepting a few persons that are distinguished for nothing but the singularity of their opinions, and a pertinacious adherence to a tenet which, both by the illustrations of reasoning, and the common sense of their fellow-citizens, has been declared absurd and untenable."

*A View of the Diseases most prevalent in the United States of America, etc. By William Currie. Philadelphia*, 1811. 1 vol., pp. 240.

*Observations on the Causes and Cure of Remitting or Bilious Fevers, etc. By William Currie. Philadelphia*, 1798. 1 vol.

Both these little volumes of Dr. Currie's are marked throughout by careful observation, by a correct philosophy, and by sound sense. Dr. Currie was a contemporary of Dr. Rush, and a practitioner in the same city. His general descriptions of disease are quite as good, to say the least, as those of his distinguished fellow-citizen, and his medical philosophy infinitely sounder and more rational. He recognized clearly the radical difference between bilious remittent and yellow fever. He was a qualified contagionist, advocating nearly the same doctrines that were subsequently adopted by Dr. Hosack and others.

*Traité de la Fièvre Jaune. Par Jean Devèze. Paris*, 1280: pp. 311. Dr. Devèze established himself, as a physician, in St. Domingo, in 1778. After a successful and prosperous career of fifteen years, he saw his fortune suddenly wrecked by the insurrection in that country, and he was forced to flee for his life. He arrived in Philadelphia in August, 1793 and was almost immediately actively engaged in the treatment of the epidemic then prevailing. He was appointed one of the physicians of the hospital at Bush Hill; but the other medical men refused to be associated with him; they resigned their places, and he took charge of the institution. Dr. Devèze remained in Philadelphia four years, so that he saw the two great epidemics of 1793 and 1797. He had also been acquainted with the disease, in its sporadic form, for fifteen years in St. Domingo. In 1794, he published a short

*Reports of the Pestilential Disorder of Andalusia, which appeared at Cadiz in the years* 1800, 1804, 1810, *and* 1813, *etc. etc. By Sir James Fellowes, M. D. London*, 1815. 1 vol., pp. 484. Sir James Fellowes was at the head of the medical department of the British armies in the Peninsula, during the war with France. He is a decided but dispassionate and rational advocate of the doctrine of contagion. He saw yellow fever at different places in Spain, but mostly at Cadiz and Gibraltar. There is no evidence, in his book, that he had studied the disease with any great care or thoroughness, and he has hardly added anything to its natural history. The proofs which he adduces of its contagiousness, and which he calls incontrovertible, seem to me to be anything but such. He copies from Arejula a very good general description of the disease, as the latter saw it at Cadiz in 1800. The temper and style of his book are dignified and gentlemanly; and this is something, in a controversy which has sometimes been conducted, to use his own words, "with an asperity of language alike disreputable to science and injurious to philosophical inquiry."

*Elements of Medical Logic. By Sir Gilbert Blane. London*, 1829. The latter part of this very elegant and philosophical essay is devoted to a vindication of the contagious character of yellow fever; and no one acquainted with the previous writings of the author, or with his clear, acute, and logical mind, could doubt for a moment that the vindication would be made not only with fairness and candor, but also with signal ability. Blane himself had seen but little of the disease; it rarely occurred during his service on the West India station; and his convictions are, for the most part, the result of a careful and conscientious examination of all the trustworthy evidence which he was able to procure. It is not improbable that, in some remarks upon the report of the French commissioners to investigate the disease at Cadiz, he may have had some reference to his own position. "It has been objected," he says, "that those commissioners were not on the spot when the epidemic prevailed. If this objection were well founded, it would go to invalidate all judicial investigations whatever. It is not deemed a necessary qualification for a judge on the bench that he should have been actually present at the transactions upon which he is to decide. On the contrary, by an accurate and comprehensive survey of the points and bear-

ings of a complex case, he is better qualified to form an opinion than the actual actors in them, besides being divested of prejudice. It is requisite, for the forming of a clear, calm, and impartial judgment, that objects, whether natural or moral, should be placed at a certain distance, in order that they may be seen in those relative positions and bearings, which the eye and mind of a close observer, or of a party concerned, is incapable of taking in." The general argument for the contagiousness of yellow fever is clearly, fairly, systematically, earnestly, and strongly stated. The opposite doctrine, he calls "*a deplorable and mischievous delusion*," and the reasons upon which it rests, "*a piece of cavilling sophistry*." "The question," he says, in conclusion, "seems now to be brought to such a point that we may venture to challenge any candid, intelligent, and unbiased man, whether in or out of the profession, to open his eyes, and deny that this disease is contagious; and if it be not, then has the author of this discussion lost every faculty of distinguishing truth from falsehood, of discerning light from darkness."

*Observations and Inquiries into the Nature and Treatment of the Yellow or Bulam Fever, etc. By Edward Doughty. London*, 1816. 1 vol., pp. 238. Mr. Doughty was in the medical service of Great Britain, in Jamaica, during a period of eight years, at the beginning of the present century; and he was at Cadiz in the epidemic season of 1810. He was one of the surgeons in the staff under Sir James Fellowes; he wished to study the pathology of yellow fever by examinations after death, to which objections were made by the latter; Dr. Doughty was guilty of some alleged rudeness towards his official superior, and was in consequence dismissed from the service. There is nothing new in his book. He is an advocate for early bleeding; and a zealous non-contagionist.

*Observations on the Inflammatory Endemic, commonly called Yellow Fever, etc. By Nodes Dickinson. London*, 1819. Mr. Dickinson was extensively familiar with the disease about which he writes, during a practice of twenty years in the West Indies. His work is diffuse, and of no special value.

*Du Typhus d'Amerique, ou Fièvre Jaune. Par Vr. Bally. Paris*, 1814: pp. 623. This is a systematic treatise on yellow fever, by a French physician, who seems to have had extensive opportunities for studying the disease in the West India Islands.

He is a contagionist. He made a considerable number of autopsies. The liver, he says, was frequently natural; yellow in two cases, and pale in one. His description of the disease is systematic, detailed, and admirable. His treatment has nothing very special; it is moderately antiphlogistic during the first stage; and stimulating and cordial subsequently.

*Observations upon the Bulam Fever, etc. etc. By William Pym, Esq. London*, 1815: pp. 307. This work is made up of running and desultory commentaries upon various subjects connected with yellow fever. The author examines at considerable length, and endeavors to controvert the opinions of Dr. Bancroft and Dr. Burnett. He is a very zealous contagionist; and he finds one of the strongest grounds for his opinion on this subject in the non-liability of persons to second attacks of the disease. He is no friend to the lancet.

*Remarks on the Yellow Fever of the South and East Coasts of Spain, etc. By Thomas O'Halloran, M. D. London*, 1823: pp. 208. Dr. O'Halloran was for many years connected with the medical service of the British government, and had frequent opportunities of seeing yellow fever in the West India Islands and in Spain. During the extensive and malignant epidemic of 1821, he visited many of the principal yellow-fever localities of the south and east coasts of Spain, for the express purpose of studying the disease. The book before us is the fruit of these studies. It contains medico-topographical sketches of Barcelona, Tortosa, Malaga, Puerto de Santa Maria, Xerez, Lebrixa, San Lucar, and Cadiz; with remarks on the origin and causes of the epidemic in these several towns and cities. The author is a zealous and unqualified non-contagionist.

Less than twenty pages, constituting, however, a very interesting and valuable portion of the book, are occupied with an account of his pathological researches in yellow fever. He says that he had seen more than *two hundred* dissections in this disease; but he reports only eleven. Sufficient reference to these has already been made. He says that the examination of yellow-fever subjects ought to take place as soon as possible after death; since the different organs, and more particularly those which have suffered from the disease, undergo changes in a few hours, so as to become brown, black, and apparently gangrened.

*Essays on Various Subjects of Medical Science. By David Hosack, M. D., F. R. S., etc. New York*, 1824: 2 vols. The first volume of these miscellaneous Essays contains Dr. Hosack's *Observations on the Laws which govern the communication of Contagious Diseases.* The leading objects of the Essay are to show that yellow fever is not the product of miasmata, or of any animal or vegetable decomposition; but that it depends upon a *specific virus, which is generated by the disease in the human body; and that this virus, when introduced into a local atmosphere already vitiated by vegetable and animal impurities, is endowed with the property of indefinitely multiplying itself;* or, in other words, by a kind of fermentative process assimilating the impure atmosphere to itself. In this atmosphere, according to Dr. Hosack, but not elsewhere, yellow fever is communicable from the sick to the well.

*Observations upon the Autumnal Fevers of Savannah. By W. C. Daniell, M. D. Savannah*, 1826. The principal purposes of Dr. Daniell's publication are to state some new views of the nature and pathology of autumnal fevers, and to recommend a somewhat novel method of treatment. The former consist altogether of hypothetical rationalism; and the chief element of the latter consists in producing extensive and continued inflammation of the skin by sinapisms. All success in the treatment of autumnal fever, yellow fever included, depends upon this inflammation of the skin. What leeches were to Broussais; what the lancet is to Bouillaud; and what quinine is to many of our southwestern physicians, sinapisms are to Dr. Daniell. His other remedies are capsicum, serpentaria, and Peruvian bark. He insists earnestly upon the congestive and non-inflammatory nature of yellow fever; and he argues that all its phenomena, symptomatical and pathological, go to corroborate this doctrine. He is opposed to bleeding, to mercurials, and to active purging.

*Memoirs of the West Indian Fever, etc. etc. By John Wilson, M. D., R. N. London*, 1827: pp. 217. This is one of the great numbers of valuable contributions which have been made to medical science by the medical officers of the British army and navy. Like most other works of the class to which it belongs, it is partial in its design, and somewhat fragmentary in its character; it does not profess to be a systematic treatise on the subject with which it is concerned, but it furnishes valuable materials for

the construction of such a treatise. It consists of five separate Memoirs. The first is devoted to a general description of the several forms of yellow fever, and to the methods of treatment which they respectively require. Dr. Wilson's descriptions I have already quoted. In the inflammatory forms, he is a bold and active bleeder; in the congestive forms, he has little faith in remedies, but would try hot and stimulating applications to the skin; warm, aromatic, and cordial drinks, a warm purgative, and calomel in large and repeated doses.

In the second Memoir, Dr. Wilson examines some of the leading opinions in regard to the causes of yellow fever, especially those which have referred the disease to *atmospheric heat*, to *contagion*, to *marsh miasmata*, and to the *principle of vegetation*. All these opinions he rejects.

In the third Memoir, he states his own opinions about the cause of the disease. He suggests, in the first place, that this cause may be in some way connected with a *calcareous formation* of the soil, since the principal yellow-fever localities in the West Indies, he says, have a soil of this character. The essential cause, he believes, is furnished by *wood*, consisting in a gaseous product of trees and shrubs, in a state of decomposition, generally given out by them in a cut or dried state, but which may arise from a living forest, trees being capable, in different parts of their frame, of simultaneous growth and decay.

In the fourth Memoir, Dr. Wilson states very clearly some of the more obvious reasons for regarding yellow fever as a distinct, specific disease, and not an aggravated variety of merely bilious remittent.

The fifth Memoir consists of a few remarks upon the *nature* of yellow fever, and upon the manner in which the cause of the disease acts upon the body. Of course, it is mostly hypothetical; but it is less unreasonable than most speculations of a similar character.

*De l'Opinion des Médecins Américains sur la Contagion ou la Non-Contagion de la Fièvre Jaune, etc. etc. Par N. Chervin. Paris*, 1829: pp. 192. It is hardly worth while to enumerate the titles of all the different works published by M. Chervin on the subject of the yellow fever. The character of these works, and the history of his life and labors, are well known to all those who have made this disease a subject of study. He was the great

champion of non-contagion in the Old World; and nearly the whole of the five volumes which he published, between 1827 and 1840, is devoted to the vindication of his favorite doctrine. The volume whose title I have given is mostly taken up with his replies to Dr. Hosack and Dr. Townsend, of New York. It is painful and humiliating to witness the violence and harshness of this controversy.

*Anatomical, Pathological, and Therapeutic Researches on the Yellow Fever of Gibraltar of* 1828. *By P. Ch. A. Louis. Boston*, 1839: pp. 374. The history of this remarkable work is well known. It was first presented to the public, in an English translation, by Dr. G. C. Shattuck, Jr., of Boston, in 1839, more than ten years after its materials were collected. Since that time, it has been published in the original French, in the second volume of the *Transactions of the Medical Society of Observation.* It does not profess to be a systematic treatise on yellow fever; indeed, it is only a partial history of a single epidemic, many points in the natural history of the disease being wholly omitted. Still, as a description of the symptoms and lesions of yellow fever, it is of very great value, and no history of the disease can be rendered complete without constant reference to its pages.

*The New Orleans Medical Journal* contains numerous papers on yellow fever, some of which are of much value; they have already been laid under liberal contribution in the preceding history. I will briefly refer to the principal ones amongst them. First, an *Essay on Yellow Fever, by J. F. Beugnot.* It is written in the English language, but in the French idiom; and is the work, I presume, of a French physician. It is mostly taken up with the subject of treatment. Dr. Beugnot's leading object is to show the importance of what he calls *syncopal* bloodletting in the treatment of yellow fever. He gives to Dr. Luzenburg the credit of originating this practice. The evidence of the efficacy of this method consists merely in general assertion, and is of course in no degree conclusive or satisfactory. Second, *An Account of the Yellow Fever at Rodney, in* 1843, *by Dr. Williams and Dr. Andrews.* Rodney is a small town on the east bank of the Mississippi, forty miles above Natchez. It was visited by the yellow fever, for the first time, in 1843. The authors of the paper believe that the disease did not originate from local causes, but was introduced from New Orleans. Third, an article by Dr. Lambert,

of twenty pages. This is in good part an attempt to give the *reasons* of many of the phenomena and relations of the disease; and it is as successful and satisfactory, perhaps, as such attempts usually are. Fourth, *Thoughts on Yellow Fever, etc., by Dr. P. H. Lewis, of Mobile.* This is a reply to the arguments of Dr. Monette, and Dr. Carpenter, who advocate the *transportability* of the poison of yellow fever. Dr. Lewis does not admit that it ever possesses this property. Fifth, *A Report on the Yellow Fever at Woodville, by Dr. De Valetti, and Dr. Logan.* Woodville is a small inland town in the State of Mississippi, about fifteen miles in a direct line from the Mississippi River. In 1844, it was visited by yellow fever, and the usual differences of opinion arose in regard to the cause and origin of the disease. In this paper, it is ascribed to domestic sources. Sixth, *Sketch of the Yellow Fever of Mobile, etc., by P. H. Lewis, M. D.* This sketch consists of two long articles. Notwithstanding its want of method, and its hasty preparation, it contains much matter of importance and value. I have made free use of its materials in the preceding history. Seventh, *A Report, by Dr. Stone, on the Origin of the Woodville Epidemic, with a Discussion growing out of the Report before the Louisiana Medical Society.* Dr. Beugnot states that Woodville possesses in the highest degree every condition essential to salubrity; a silicious soil, an elevated position, a dry atmosphere, moderate temperature, and so on. He is a decided anticontagionist; but he is not less decided in his conviction, that the seeds of the poison may be transported from one place to another —*multiplying and extending themselves in the locality where they are introduced.* He advocates quarantine for ships, and their cargoes, but not for persons. Dr. Luzenburg expresses his suspicions that the fever at Woodville was introduced from New Orleans, or Bayou Sara, during the present year, in boxes of merchandise, or possibly some years previously in goods which had not been opened. Dr. Stone's report contains a full account of the Woodville epidemic.

In the second volume, there are the following papers: First, *Practical Remarks on the Yellow Fever which prevailed at Opelousas, in* 1837, 1839, *and* 1842*; by Dr. Cooke.* Dr. Cooke believes that the poison of the disease is generally introduced from New Orleans. Second, a sketchy, interesting, sensible paper, historical, topographical, critical, and so on, by Dr. Dowler of New

Orleans. Third, *Remarks on Yellow Fever, by Dr. Harrison.* The author praises, almost extravagantly, the sulphate of quinine. He deprecates, in the strongest terms, the mercurial practice; and says that general bleeding is only an exceptional remedy, and always to be used with great caution and reserve. Fourth, *An Account of the Yellow Fever at New Orleans, in* 1846, *by Dr. Fenner.* The author concludes that the disease was of domestic origin; and that the prevalence of summer fevers in the city is not in proportion to the amount of heat, moisture, and putrid matters. Fifth, *Cases showing the Effect of Yellow Fever on the System for a long period after an attack, by Dr. Stone, of Natchez.* This is an important subject; but the cases given by Dr. Stone can hardly be regarded as conclusive. Sixth, *An Account of the Yellow Fever at Woodville, by Dr. Stone, of Woodville.* The most singular thing in this paper is the unqualified confidence with which the writer speaks of his method of treatment. He bled, at the beginning, freely and repeatedly; and then gave what he calls *sedative* doses of calomel, usually from forty to sixty grains. This remedy, thus used, Dr. Stone regards as a specific just as absolute and efficacious in yellow fever as quinine is in intermittents!

There are several interesting and valuable articles in the *American Journal of Medical Sciences*, by Dr. E. H. Barton, Dr. E. B. Harris, Dr. Barrington, Dr. Nott, and others.

The article in the *Cyclopedia of Practical Medicine* is by Dr. J. Gillkrest. The author begins with quotations from Dr. Rush, and from British and Spanish physicians, tending to show that yellow fever sometimes assumes a *remittent* type. He next gives a short but interesting historical sketch of the disease in Europe and America, showing clearly enough that yellow fever prevailed, often and extensively, as long ago as the sixteenth and seventeenth centuries. Dr. Gillkrest is a strong anti-contagionist; and he details many striking facts which fell under his own observation at Gibraltar, in proof of his opinions on this subject. He seems to think highly of the mercurial treatment.

The paper in the *Library of Practical Medicine* is by Dr. Shapter. It is much shorter, and less elaborate, than that of Dr. Gillkrest.

# INDEX.


Abdomen, state of,
bilious fever in, 363
typhoid fever, 77
typhus fever, 215
yellow fever, 467
Abdominal lesions,
periodical fever in, 372
typhoid fever, 90—103
typhus fever, 232—237
yellow fever, 480—491
Abdominal pains,
typhoid fever in, 76
typhus fever, 217
yellow fever, 467
Abdominal symptoms,
bilious fever in, 361—366
congestive fever, 404
typhoid fever, 72—78
typhus fever, 213—217
yellow fever, 464—468
Abdominal typhus, 51, 288
Access, mode of,
bilious fever, 350
congestive fever in, 399
typhoid fever, 56, 139
typhus fever, 200
yellow fever, 458
Access, period of,
periodical fever in, 353
yellow fever, 459
Acclimation,
periodical fever in, 396
yellow fever, 506
Affusions and ablutions,
congestive fever in, 435
typhoid fever, 173, 175
typhus fever, 328
yellow fever, 557
African fever, 450
climate, 452
diseases, 452
Age, influence of,
periodical fever on, 390
typhoid fever, 124, 143, 282
typhus fever, 252, 265, 282
yellow fever, 502, 544
Algid fever, 402
Alteratives in typhoid fever, 171, 185
Alum in typhoid, 184
Anderson, Dr., 375
Andral, 155, 157
Andral and Gavarret, 86
Anæmia, 414, 443
Animalcular hypothesis, 393
Animal decomposition, 393, 513
Annesley, Dr., 449
Antimony,
typhoid fever in, 168, 172
typhus fever, 331
Antiphlogistic treatment,
yellow fever in, 555
Aorta, lesions of, 85
Appetite,
bilious fever in, 362
typhoid fever, 73
typhus fever, 214
yellow fever, 464
Armstrong, Dr., 245, 278
Arnold, Dr., 489, 490
Arrott, Dr., 243, 253
Autenrieth, Dr., 288

Bancroft, Dr., 555, 573
Bailly, Dr., 370, 448
Bally, Dr., 575
Barbour, Dr., 434
Barker, Dr., 198, 339
Barrington, Dr., 458, 525
Bateman, Dr., 269, 340
Bed-sores, 178
Beugnot, Dr., 579
Bibliography of periodical fever, 446—453
Alibert, 448
Annesley, 449
Bailly, 448
Boyle, 452
Brown, J., 453
Cleghorn, 446
Drake, 453
Johnson, J., 447
Lind, James, 447
Macculloch, 448
Maillot, 449
M'William, 450
Senac, 446
Shapter, 453
Bibliography of typhoid fever, 190—194
Chomel, 193
Forget, 193
Hale, 193
Jackson, J., 193
Jenner, 194
Louis, 192
Prost, 190
Smith, N., 192
Bibliography of typhus fever, 337—344

Bibliography of typhus fever—*continued.*
Barker and Cheyne, 339
Bateman, 340
Cheyne, 343
Christison, 343
Clutterbuck, 338
Cormack, 342
Gaultier de Claubry, 341
Harty, 339
Hildenbrand, 338
Jackson, R., 340
Mills, 338
Percival, 341
Prichard, 341
Pringle, 337
Reid, 344
Smith, 343
Trotter, 337
Tweedie, 343
Bibliography of yellow fever, 565—581
Amer. Journ. of Med. Sci., 581
Bally, 575
Bancroft, 573
Blane, 565, 574
Burnett, 572
Carey, 570
Chervin, 578
Chisholm, 567
Currie, Wm., 570, 571
Daniell, 577
Devèze, 571
Dickinson, 575
Doughty, 575
Fellowes, Sir J., 574
Gillkrest, 581
Hillary, 566
Hosack, 577
Hunter, J., 567
Jackson, R., 568
Lempriere, 567
Louis, 579
Mosely, 566
N. O. Med. Journ., 579
O'Halloran, 576
Pym, Sir W., 576
Rush, 569
Shapter, 581
Wilson, 577
Bile, character of,
periodical fever in, 377
typhoid fever, 103
typhus fever, 234
yellow fever, 489
Bilious remittent fever, 349—397
Biles in typhoid fever, 83
Bis-feriens pulse, 62
Black vomit, 466, 481, 484
Blane, Sir G., 202, 332, 472, 525, 562, 565, 574
Blisters,
typhoid fever in, 173, 177, 181, 185
Bloodletting,
bilious fever in, 429
congestive fever, 435
typhoid fever, 172, 175, 180, 181, 182
Bloodletting—*continued.*
typhus fever, 324—328
yellow fever, 555
Blood, state of,
periodical fever in, 368
typhoid fever, 86, 165
typhus fever, 224, 229
yellow fever, 479
Boling, Dr., 350, 355, 358, 364
Bouillaud, 182
Bowels, state of,
bilious fever in, 364
congestive fever, 404
typhoid fever, 74
typhus fever, 215
yellow fever, 467
Boyle, Dr., 452
Bracken, Dr., 258
Brain, lesions of,
periodical fever in, 368
typhoid fever, 89
typhus fever, 230
yellow fever, 480
Brandy in yellow fever, 559
British and Foreign Review, 302, 323
Bronchiæ, lesions of,
periodical fever in, 367
typhoid fever, 87
typhus fever, 227
Broussais, 53, 191
Brown, Dr. Wm., 334
Brunner's glands, 380
Burnett, Dr., 555, 572
Butler, Dr., 239

Calomel,
bilious fever in, 431
congestive fever, 434
typhoid fever, 168, 171, 173
typhus fever, 328
yellow fever, 553—555, 558
Calor mordicans, 202
Camphor in typhus fever, 332
Carey, M., 518, 570
Causes of death,
periodical fever in, 385, 427
typhoid fever, 104
yellow fever, 494
Causes of periodical fever, 386—39
age, 390
exposure, &c., 392
locality, 386
malaria, 393
race, 391
season, 389
sex, 391
temperature, 389
weather, 389
Causes of typhoid fever, 107—128
age, 124
contagion, 120—123
epidemic, 124
exposure, &c., 128
filth, crowding, &c., 127
locality, 107—118
occupation, 127

Causes of typhoid fever—*continued.*
race, 126
recent residence, 127
season, 118
second attacks, 123
sex, 126
Causes of typhus fever, 238—254
age, 252
contagion, 243—248
crowding, filth, &c., 249
epidemic, 248
excesses, &c., 249
famine, 249
fatigue, 249
locality, 238
recent residence, 254
season, 241
sex, 253
weather, 242
Causes of yellow fever, 495—527
acclimation, 506
age, 502
constitution, 505
contagion, 515
decaying matters, 513
epidemic, 510
essential poison, 526
exposure, &c., 524
infected districts, 498
locality, 495
marsh miasmata, 512
occupation, 506
race, 504
season, 499
second attacks, 508
sex, 502
sporadic, 511
temperature, 500
weather, 500
Cerebral respiration, 62
Cerebral symptoms and lesions,
relations between, 90, 230
Cerebro-spinal symptoms,
bilious fever in, 358
congestive fever, 400
typhoid fever, 63
typhus fever, 206
yellow fever, 469
Chervin, 578
Cheyne, Dr. J., 198, 208, 260, 271, 339
Chills,
bilious fever in, 351
congestive fever, 402
intermittent fever, 406
typhoid fever, 58, 140
typhus fever, 201
yellow fever, 460
Chisholm, Dr., 515, 567
Chloride of soda,
typhoid fever in, 178
Chomel, 57, 132, 163, 174, 193
Christison, Dr., 248, 343
Cicatrization of intestinal ulcers, 99
Cinchona,
bilious fever in, 431
congestive fever, 439
Cinchona—*continued.*
typhoid fever, 173, 176
typhus fever, 330
yellow fever, 558
Cities, yellow fever, 496
Clark, Dr. A., 124
Cleanliness,
typhoid fever in, 174, 180, 248
typhus fever, 248, 334
yellow fever, 560
Cleghorn, Dr., 408, 419, 446
Clutterbuck, Dr., 338
Coe, Dr., 110
Cold affusions,
congestive chill in, 435
typhoid fever, 173, 175,
yellow fever, 557
Collapse,
congestive fever in, 402
yellow fever, 536
Color of skin,
bilious fever in, 356
typhus fever, 224, 257
yellow fever, 474, 491
Coma,
congestive fever in, 400
typhoid fever, 65, 140
typhus fever, 210, 268
yellow fever, 471
Comatose fever, 400
Complications,
typhoid fever in, 136
typhus fever, 255
Congestive fever, 398—405
algid, 402
comatose, 400
delirious, 401
gastro-enteric, 404
mode of attack, 399
mortality, 416
names, 398
prognosis, 416
treatment, 433
type, 399
Constitution, in yellow fever, 505
Contagion,
typhoid fever of, 120—123
typhus fever, 243—248
yellow fever, 515—524
Contents of gall-bladder,
periodical fever in, 377
typhoid fever, 103
typhus fever, 234
yellow fever, 489
Contents of stomach and bowels,
periodical fever in, 383
typhoid fever, 92
yellow fever, 481, 484
Contingent contagion, 519
Convalescence,
yellow fever from, 538
Cooke, Dr., 390, 580
Cordials,
typhoid fever in, 170, 176
typhus fever, 329
yellow fever, 558

Core, Dr., 109, 152
Cormack, Dr. 342
Coug
  typhoid fever in, 63
  typhus fever, 205
Critical days, 411
Crises, 256, 259
Crowding, 249
Currie, Dr. Wm., 446, 570, 571
Cutaneous eruptions,
  typhoid fever in, 79
  typhus fever, 218—224
Cutaneous sensibility,
  typhoid fever in, 69
  typhus fever, 212—273

Damaged coffee, 513
Daniell, Dr., 577
Darwin, Dr., 284
Davidson Dr. 254, 296
Deafness,
  typhoid fever, 69, 141
  typhus fever, 212
Death, causes of,
  periodical fever in, 384, 427
  typhoid fever, 10
  yellow fever, 494
Definition,
  periodical fever of, 444
  typhoid fever, 188
  typhus fever, 335
  yellow fever, 563
De Haen, 285
De Larroque, 183
Delirium,
  bilious fever in, 358
  congestive feve., 401
  typhoid fever, 65, 140
  typhus fever, 207
  yellow fever, 470
Description, methods of, 54
Desquamation of cuticle, 61
Devèze, Dr., 519, 571
Diagnosis,
  congestive fever of, 422
  periodical fever 422
  typhoid fever, 47—158
  typhus fever, 272—321
  yellow fever, 547—549
Diaphoretics,
  bilious fever in, 433
  typhus fever, 331
Diarrhœa,
  bilious fever in, 363
  typhoid fever, 74, 142
  typhus fever, 216
Dickinson, Dr., 575
Dickson, Dr. S. H., 554
Diet,
  typhoid fever in, 169
  typhus fever, 334
Differences between,
  bilious and typhoid fever, 152, 422
  typhoid and typhus fever, 273—320
Difficulty of swallowing,
  typhoid fever in, 73, 91, 142
Discharges from bowels,
  bilious fever in, 364
  congestive fever, 404
  involuntary, 142
  typhoid fever in, 74
  typhus fever, 216
  yellow fever, 467
Distension of abdomen,
  bilious feve in, 363
  typhoid fever, 77
Dizziness,
  bilious fever in, 360
  typhoid fever, 69
  typhus fever, 212
  yellow fever, 470
Doane, Dr. 239
Dothinenteritis, 50
Douglas, Dr., 256
Doughty, Dr., 500, 575
Dowler, Dr., 510, 581
Drake, Dr., 441, 453
Drinks,
  bilious fever in, 433
  typhoid fever, 170, 173, 175, 177, 180
Duration,
  periodical fever of, 407
  typhoid fever, 134
  typhus fever, 258
  yellow fever, 533, 538
Dyspnœa in typhoid fever, 63

Easterly winds, influence of,
  yellow fever on, 501
Effects of treatment,
  typhoid and typhus fever, 277
  typhus fever, 334
Elliptical plates, lesions of,
  bilious fever in, 380
  constancy, 152
  nature of, 161, 165
  typhoid fever in, 93
  typhus fever, 233
Emaciation,
  typhoid fever in, 78
  typhus fever, 217
Emetics,
  typhoid fever in, 168, 172, 184
  typhus fever, 332
Enemata,
  typhoid fever in, 168, 175, 180
Entero-mesenteric fever, 50
Epidemic influences,
  typhoid fever in, 124
  typhus fever, 248, 268
  yellow fever, 510
Epigastric tenderness,
  bilious fever in, 363
  typhus fever, 216
  yellow fever, 468
Epiglottis, lesion of, 88
Epistaxis,
  treatment of, 177
  typhoid fever in, 79, 141
  typhus fever, 218
  yellow fever, 475
Eruptions, cutaneous,

Eruptions, cutaneous—*continued.*
typhoid fever in, 79
typhus fever, 218, 224, 269
Erysipelas, 83, 136, 143
Eschars,
typhoid fever in, 82
typhus fever, 224
Essential poison of yellow fever, 526
Ether,
congestive fever in, 438
typhoid fever, 177
Exacerbations,
typhoid fever in, 60
typhus fever, 202
Exemption from second attacks,
typhoid fever in, 123
typhus fever, 251
yellow fever, 508
Expectant treatment,
typhoid fever in, 172, 175
Expedition to the Niger, 450
Exposure, excesses, &c.,
periodical fever in, 392
typhoid fever, 128, 145
yellow fever, 524
Eyes, state of,
typhoid fever in, 69
typhus fever, 210
yellow fever, 472

Falling off of hair, 61
Famine,
typhus fever, cause of, 249
Fearn, Dr., 438
Febrile symptoms,
bilious fever in, 351
typhoid fever, 58
typhus fever, 201
yellow fever, 460
Fellowes, Sir J., 500, 521, 574
Fever,
algid, 402
bilious remittent, 349
camp, 199
comatose, 400
congestive, 398
contagious, 199
hospital, 199
intermittent, 406
jail, 199
malignant, 199
periodical, 347
petechial, 199
putrid, 199
remittent, 349, 397
spotted, 239
typhoid, 49—194
typhus, 197—344
yellow, 457
Fever, bilious remittent, 349, 397
diagnosis, 422—424
duration and march, 408—414
mortality, 415
symptoms, 350—365
treatment, 429—433
Fever, congestive, 398—405
Fever, congestive—*continued.*
algid, 402
comatose, 400
delirious, 401
gastro-enteric, 404
mode of attack, 399
mortality, 415
names, 398
prognosis, 415
type, 399
Fever of New England, 51, 107
Fever, periodical, 347—453
bibliography, 446—453
causes, 386—396
definition, 444
diagnosis, 422
duration and march, 408—414
introductory, 347
lesions, 367—385
mortality, 415
names, 349
prognosis, 416
symptoms, 350—366
theory, 425
treatment, 429
varieties, 397—407
Fever, typhoid,
bibliography, 190—194
causes, 107—128
definition, 188
diagnosis, 147—158
duration, march, &c., 134
history, 52
lesions, 84—106
methods of description, 54
mortality and prognosis, 139—146
names, 50
relapses, 137
sequelæ, 138
symptoms, 56—83
theory, 159—166
treatment, 167—187
varieties, 129—133
Fever, typhoid and remittent,
diagnosis of, 147
Fever, typhoid and typhus,
distinctions between, 148, 272, 307
Fever, typhus,
bibliography, 337—344
causes, 238—254
definition, 335
diagnosis, 272—321
duration and march, 258—263
introductory, 197
lesions, 226—237
mortality, 264—271
names, 199
symptoms, 200—225
theory, 322
treatment, 324—334
Fever, yellow, 455
mode of access, 458
names, 457
symptoms, 458
Filth, crowding, &c.,
typhoid fever, 127

Filth, crowding, &c.—*continued.*
typhus fever, 249
yellow fever, 513
Flint, Dr., 118
Follicular enteritis, 50
Fomites, 524
Forget, 57, 97, 193
Forry, Dr., 386
Frick, Dr., 375

Gall-bladder, contents of,
periodical fever in, 377
typhoid fever, 103
typhus fever, 234
yellow fever, 489
Gastric fever, 50, 343
Gastric symptoms and lesions, relations between, 92
Gaultier de Claubry, 298, 304, 341
Gendron, 122
Gerhard, Dr., 51, 198, 206, 209, 213, 230, 291
Gillkrest, Dr., 501, 503, 581
Gilchrist, Dr., 287
Graves, Dr., 270
Gurgling, abdominal,
typhoid fever in, 78

Hale, Dr. E., 51, 76, 193, 289
Hankey, the, 515
Harrison, Dr., 581
Harty, Dr., 254, 339
Headache,
bilious fever in, 358
typhoid fever, 64
typhus fever, 206
yellow fever, 458, 469
Hearing, state of,
bilious fever in, 360
typhoid fever, 69
typhus fever, 212
yellow fever, 474
Heart, action of,
bilious fever in, 357
typhus fever, 204
yellow fever, 476
Heart and aorta, lesions of,
periodical fever in, 367
typhoid fever, 84
typhus fever, 229
yellow fever, 478
Heat of skin,
bilious fever in, 355
typhoid fever, 59
typhus fever, 270
yellow fever, 460
Hemorrhage from bowels,
congestive fever in, 404
typhoid fever, 75, 142
typhus fever, 216
treatment of, 177
Hemorrhage in yellow fever, 475
Henderson, Dr., 208, 214, 221
Hiccough,
typhoid fever in, 70
yellow fever, 474

Hildenbrand, 208, 262, 338
Hillary, Dr., 113, 501, 566
History of typhoid fever, 52
Holmes, Dr. O. W., 387
Hosack, Dr., 499, 520, 577
Howard, Dr., 374
Hudson, Dr., 263, 297
Hungarian fever, 349
Hunter, Dr. J., 567
Huxham, 113, 192, 220, 284, 322

Identity of typhus and typhoid fever, 272
Incubation, period of,
typhoid fever in, 122
typhus fever, 246
yellow fever, 540
Infected districts, 498
Injections,
typhoid fever in, 168, 175, 180
Intermittent fever, 406
Intestines, lesions of,
periodical fever in, 380
typhoid fever, 92—101
typhus fever, 232—236
yellow fever, 483
Intestinal lesions and symptoms, relations between, 101
Intestinal perforation, 77
Intestinal ulcerating typhus, 51
Introductory,
periodical fever to, 347
typhoid fever, 49
typhus fever, 197
Italian authors, 349, 376

Jackson, Dr. J., 52, 57, 61, 68, 79, 115, 126, 134, 168, 193
Jackson, Dr. J., Jr., 52
Jackson, Dr. J. B. S., 52, 154
Jackson, Dr. R., 340, 568
Jackson, Dr. S., 111
Jenner, Dr., 57, 59, 67, 71, 80, 87, 194, 201
Jennings, Dr., 124, 125
Johnson, Dr. J., 447

Kimball, Dr. G., 119

Landouzy, Dr., 299
Large intestine, lesions of,
periodical fever in, 383
typhoid fever, 100
typhus fever, 333, 242
yellow fever, 484
Latent form,
typhoid fever of, 130
Latent period of contagion,
typhoid fever in, 121
typhus fever, 246
yellow fever, 540
Latent period of poison,
periodical fever in, 395
Leake, Dr., 110
Lempriere, 535, 561, 567
Lenticular spots, 79, 274, 285, 308
Lesions in periodical fever, 367—385

Lesions in periodical fever—*continued.*
blood of, 367
brain, 368
general remarks on, 383
heart, 367
importance of, 384
intestines, 380
liver, 372—377
Peyer's glands, 381
relations, 383
spleen, 377
stomach, 378
Lesions in typhoid fever, 51, 84—106
aorta, 84
blood, 86
brain, and its membranes, 89
bronchiæ, epiglottis, &c., 88
children, 103
general remarks on, 104
heart, 84
importance, 104
large intestine, 100
liver, 103
lungs, 87
lymphatic glands, 101
pancreas, salivary glands, urinary and sexual organs, 103
perforation, 95
Peyer's glands, 94
pharynx and œsophagus, 90
small intestines, 92
spleen, 102
stomach, 91
Lesions in typhus fever, 226—237
blood of, 229
brain, 230
general remarks on, 236
heart, 229
intestines, 232, 234
introductory to, 226
liver, 233
lungs, 227
mesenteric glands, 233, 234
miscellaneous, 236
Peyer's glands, 233, 234
petechiæ, 236
spleen, 233, 234
stomach, 232, 236
Lesions in yellow fever, 477—494
blood, 479
brain, &c., 480
contents of stomach, 481
gall-bladder, 489
general remarks, 491
heart, 478
intestines, 483
liver, 484
lungs, 477
mesenteric glands, 491
spleen, 491
stomach, 480
urinary organs, 491
Letter from,
Coe, Dr., 110
Core, Dr., 109, 352
Darwin, Dr., 284
Letter from—*continued.*
Jennings, Dr., 124, 126
Kimball, Dr., 119
Leake, Dr., 110
Linton, Dr., 110
Mattingly, Dr., 108
Power, Dr., 366
Sutton, Dr., 109
Vaughan, Dr., 284
Wooten, Dr., 109, 152
Lewis, Dr. P. H., 127, 391, 462, 466, 470, 471, 509, 534
Lind, Dr., 440, 447
Liver, lesions of,
periodical fever in, 372
typhoid fever, 103
typhus fever, 233
yellow fever, 484
Localities of periodical fever, 386—389
Africa, 388
Hungary, 388
Italy, 389
New England, 386
United States, 386
Upper Canada, 387
Localities of typhoid fever, 107—118
Alabama, 109, 117
Birmingham, 113
Dedham, 117
Edinburgh, 112
France, 111
Georgia, 110
Germany, 111
Gibraltar, 111
Glasgow, 113
Great Britain, 112
Lowell, 57, 107, 114, 119
Middle and Western States, 108
Minorca, 113
Mississippi, 110
Missouri, 110
Newcastle-upon-Tyne, 113
New England, 51, 112
New Orleans, 111
New York, 118
Pennsylvania, 111
Petit-Gênes, 123
Richmond, Mass., 119, 124
Tennessee, 109
Virginia, 111
Localities of typhus fever, 238—241
Cities of the United States, 238
France, 240
Germany, 241
Great Britain, 241
Ireland, 241
Middle States, 240
New England, 238, 240
New York, 239
Philadelphia, 198, 291
Rheims, 299
West Indies, 241
Localities of yellow fever, 495—499
Commercial cities, 495
Gulf of Mexico, 496
Infected districts, 498

Localities of yellow fever—*continued.*
Latitudes, 495
Shipboard, 497
Spain, 496
United States, 496
West Indies, 499
Local bleeding,
periodical fever in, 430
typhoid fever, 182, 185
typhus fever, 327
yellow fever, 556
Local pains,
bilious fever in, 358
typhoid fever, 64
typhus fever, 206
yellow fever, 469
Lombard, Dr., 289
Louis, 73, 79, 179, 191, 472, 579
Louis and Trousseau, 460, 461, 477, 480, 484
Lungs, lesions of,
periodical fever in, 367
typhoid fever, 87
typhus fever, 227
yellow fever, 477
Luzenburg, Dr., 579
Lymphatic glands, lesions of,
periodical fever in, 380
typhoid fever, 101
typhus fever, 233
Lyne, Dr., 258

Macbride, Dr., 286
Macculloch, Dr., 159, 448
Maillot, 371, 400—403, 423, 437, 449
Malaria, 393, 502
Mamellonation, 92, 232, 234, 480
March,
periodical fever of, 408
typhoid fever, 135
yellow fever, 533
Marsh miasm, 393, 512
Marsh, Sir H., 246
Mateer, Dr., 253, 265
Mattingly, Dr., 108, 126
Mental anxiety in typhus fever, 267
Mercurials,
bilious fever in, 431
congestive fever, 434
typhoid fever, 168, 171, 173
typhus fever, 328
yellow fever, 553—555, 558
Mesenteric glands, lesions of bilious fever in, 380
typhoid fever, 101
typhus fever, 233
yellow fever, 491
Meteorism,
periodical fever in, 363
typhoid fever, 77, 142
typhus fever, 215
treatment of, 181
Mettauer, Dr., 111
Miasmata, 393, 512
Mills, Dr., 338
bilious fever in, 358
Mind, state of,
congestive fever, 401
periodical fever after, 413
typhoid fever in, 65
typhus fever, 207
yellow fever, 470
Mobile treatment of yellow fever, 559
Mode of access,
bilious fever in, 350
congestive fever, 399
typhoid fever, 56, 139
typhus fever, 200
yellow fever, 458
Monette, Dr., 523
Monomania, 67
Morphia in congestive fever, 434, 435
Mortality,
congestive fever in, 416
periodical fever, 415
typhoid fever, 139
typhus fever, 241, 264
yellow fever, 541
Mosely, Dr., 413, 566
Mouth and tongue,
bilious fever in, 361
typhoid fever, 72
typhus fever, 213
yellow fever,
M'William, Dr., 450
Muscles, state of,
bilious fever in, 360
typhoid fever, 69
typhus fever, 212
yellow fever, 491
Muscular debility,
bilious fever in, 360
typhoid fever, 69
typhus fever, 212
yellow fever, 473
Music in yellow fever, 561
Musk in typhoid fever, 177

Names,
bilious fever of, 349
periodical fever, 347
typhoid fever, 50
typhus fever, 199
yellow fever, 457
Nausea and vomiting,
bilious fever in, 363
congestive fever, 404
typhoid fever, 73
typhus fever, 214
yellow fever, 466
Nervous fever, 50
Nervous symptoms,
bilious fever in, 358—360
typhoid fever, 63—71
typhus fever, 206—213
yellow fever, 469—474
Neuralgia, 413
New England fever, 51
New Orleans Med. Jour., 579
North, Dr., 239
Nott, Dr., 481, 482, 487, 498

O'Brien, Dr., 198, 224
Occupation, as cause of,
typhoid fever, 127
yellow fever, 506
Odor of body,
typhoid fever in, 61
typhus fever, 203
Œsophagus, state of,
typhoid fever in, 90
yellow fever, 484
O'Halloran, Dr., 487, 576
Opium,
congestive fever in, 434, 435
intermittent fever, 440
typhoid fever, 173, 178, 181
typhus fever, 332

Pain in the bdomen,
bilious fever 363
typhoid fever, 76
typhu fever, 2 6
yellow fever, 467
Pains in back and limbs,
bilious fever in, 358
typhoid fever, 64
typhus fever, 206
yellow fever, 469
Pancreas, lesions of, 103
Parallel between typhus and typhoid fever, 308
Parry Dr. Chas., 399, 404, 434
Pennock, Dr., 198, 226, 292
Percival, Dr. E., 198, 252, 260, 341
Perforation of intestine,
typhoid fever in, 77, 95, 136
treatment of, 178, 181
Periodical fever, 347—453
Period of access,
periodical fever in, 353
yellow fever, 458
Periodicity, 427, 428
Peritonitis in typhoid fever, 136
Perrine, Dr., 438
Perry, Dr., 246, 252, 295
Petechiæ, 219, 236, 268
Peyer's glands, esions of,
bilious fever in, 380
constancy of, 152—158
nature, 161—165
typhoid fever in, 93
typhus fever, 233, 235
yellow fever, 488
Pharynx in typhoid fever, 90
Physiognomy,
bilious fever in, 360
congestive fever, 402
typhoid fever, 68 141
typhus fever, 210
yellow fever, 471
Physical signs,
typhoid fever in, 63
typhus fever, 204
yellow fever, 476
Pickels, Dr., 198, 207
Plugging nostrils, 177

Pneumonia,
bilious fever in, 357
typhoid fever, 88, 178
typhus fever, 204
Power, Dr., 306
Prichard, Dr., 341
Pringle, Sir J., 203, 220, 285, 337
Prognosis,
congestive fever in, 416
periodical fever, 415
typhoid fever, 39—146
typhus fever, 268
yellow fever, 541—546
Prophylactics in yellow fever, 560
Prost, 190
Prostitutes, 506
Pulse,
bilious fever in, 357
typhoid fever, 61, 139
typhus fever, 203
yellow fever, 461
Pupil in typhus fever, 270
Purgatives,
bilious fever in, 431
typhoid fever, 169, 183, 184
typhus fever 328
yellow fever, 558
Pym, Sir Wm., 576

Quinine, sulphate of,
bilious fever in, 432
congestive feve 434, 436, 437, 438, 439
intermittent fever, 439
typhoid fever, 181
typhus fever, 330
yellow fever, 560

Race, influence of,
periodical fever on, 391
typhoid fever, 26, 145
yellow fever, 504, 544
Recency of residence,
typhoid fever, 127, 144
typhus fever, 254
yellow fever, 506
Refrigerants,
bilious fever in, 433
typhoid fever, 173
Reid, Dr., 112, 226, 227, 228, 230, 231, 234
Relapses,
periodical fever in, 411, 442
typhoid fever, 137
typhus fever 263
yellow fever, 540
Relations of lesions to symptoms,
periodical fever in, 383
typhoid fever, 105
typhus fever, 236
yellow fever, 491
Remissions in periodical fever, 352
Remittent fever, 350—414
Respiration,
congestive fever in, 406
typhoid fever, 62, 140
typhus fever, 204

Respiration—*continued.*
yellow fever, 476
Restlessness,
congestive fever in, 405
yellow fever, 470
Retention of urine,
typhoid fever in, 143
typhus fever, 218
yellow fever, 468
Rhonchi,
bilious fever in, 357
typhoid fever, 63
typhus fever, 204
yellow fever, 476
Richardson, Dr., 381
Rigidity of muscles,
typhoid fever in, 69, 141
Rodney, yellow fever at, 579
Rose-colored spots, 79, 275, 285, 308
Rush, Dr., 458, 462, 464, 569
Rutty, Dr., 243, 267

Seaman, Dr., 520
Season, influence of,
periodical fever on, 389
typhoid fever, 118, 119, 144
typhus fever, 241
yellow fever, 497, 528
Second attacks,
periodical fever in, 411
typhoid fever, 123
typhus fever, 241
yellow fever, 508
Senac, 410, 446
Senses, state of,
bilious fever in, 360
typhoid fever, 69
typhus fever, 212
yellow fever, 474
Sensibility of skin,
typhoid fever in, 69
typhus fever, 212
Septenary revolution, 355
Sequelæ,
periodical fever of, 411, 442
typhoid fever, 67, 138
typhus fever, 262
yellow fever, 540
Sex, influence of,
periodical fever, 391
typhoid fever, 126
typhus fever, 253, 266
yellow fever, 502, 544
Sexual appetite in yellow fever, 539
Shapter, Dr., 453, 581
Shattuck, Dr., 229, 230, 292
Ships,
typhus fever in, 239
yellow fever, 496
Sighing,
congestive fever in, 405
yellow fever, 476
Signs, physical,
typhoid fever in, 63
typhus fever, 204
Sims, Dr., 287

Sinapisms,
congestive fever in, 434
typhus fever, 331
yellow fever, 577
Skin, state of,
bilious fever in, 355
congestive fever, 402
typhoid fever, 59
typhus fever, 202
yellow fever, 460
Sleep,
typhus fever in, 210
yellow fever, 471
Small intestines, lesions of,
bilious fever in, 380
typhoid fever, 92
yellow fever, 483
Smith, Dr. N., 57, 60, 67, 78, 120, 171, 192
Smith, Dr. E. H., 519
Smith, Dr. S., 280
Softening of stomach,
periodical fever in, 378
typhoid fever, 91
typhus fever, 232
yellow fever, 480
Somnolence,
typhoid fever in, 68, 140
typhus fever, 210
Sordes, 73, 464
Spanish treatment of yellow fever, 558
Spleen, lesions of,
periodical fever in, 378, 412
typhoid fever, 102
typhus fever, 233
yellow fever, 491
Sponging of body,
typhoid fever in, 174, 175
typhus fever, 329
Sporadic cases of yellow fever, 511
Spotted fever, 239
Stages,
periodical fever in, 352, 408
typhoid fever, 135
yellow fever, 536
Stewardson, Dr., 373
Stewart, Dr., 113, 216, 219, 259, 295
Stillé, Dr., 375
Stimulants,
congestive fever in, 433—439
typhoid fever, 170, 176, 180
typhus fever 329
yellow fever, 558, 559
Stomach, lesions of,
periodical fever in, 378
typhoid fever, 91
typhus fever, 232
yellow fever, 480
Stomach, state of,
congestive fever in, 404
bilious fever, 363
typhoid fever, 74
typhus fever, 214
yellow fever, 466
Stone, Dr., 507, 581
Strength, prostration of,

Strength, prostration of—*continued*:
bilious fever in, 360
typhoid fever, 70, 141
typhus fever, 212, 268
yellow fever, 473
Subsultus tendinum,
bilious fever in, 360
typhoid fever, 69, 141
typhus fever, 213
Sudamina, 82
Suffusion of eyes,
typhus fever in, 210
yellow fever, 472
Suffusion of face,
typhus fever in, 210
yellow fever, 473
Sutton, Dr., 109
Swallowing difficult, 73
Sweats,
bilious fever in, 433
congestive fever, 401
typhoid fever, 60
Swelled legs, 138
Swett, Dr., 369, 375
Symptoms of congestive fever, 399—405
Symptoms of bilious fever, 350—366
abdominal, 363
access, 350
appetite, 362
bowels, 364
chills, 351
epigastric, 363
headache, 358
mind, 358
muscles, 360
nausea and vomiting, 363
pains in back and limbs, 358
physiognomy, 360
pulse, 357
remissions, 352
senses, 360
skin, 355
thirst, 362
thoracic, 357
tongue, 361
type, 352
urine, 365
Symptoms of typhoid fever, 56—83
abdominal pains, 76
appetite and thirst, 73
chills, 58
cough, 63
cutaneous eruptions, 79
delirium, 65
emaciation, 78
epistaxis 79
eschars, 82
headache, 64
mode of access, 56
nausea and vomiting, 73
pains in the back and limbs, 64
physical signs, 63
physiognomy, 68
pulse, 61
respiration, 62
senses, 69
Symptoms of typhoid fever—*continued*.
state of skin, 59
state of mind, 65
state of muscles, 69
state of bowels, 74
somnolence, 68
tongue and mouth, 72
tympanites, 77
urine, 78
vigilance, 68
Symptoms of typhus fever, 200—225
appetite, 214
bowels, 215
blood, 224
chills, 201
cutaneous eruptions, 218
emaciation, 217
epistaxis, 218
eschars, 224
headache, 206
mind, 207
mode of access, 200
muscles, 212
nausea and vomiting, 214
pain in back and limbs, 206
physiognomy, 210
pulse, 203
senses, 212
skin, 202
thoracic, 204
tongue and mouth, 213
urine, 217
Symptoms of yellow fever, 458—476
abdomen, 467
appetite, 464
bowels, 467
chills, 460
color of skin, 474
epigastrium, 467
headache, 469
heat of skin, 460
hemorrhages, 475
local pains, 469
mind, 470
mode of access, 458
muscles, 473
nausea and vomiting, 466
period of access, 458
physiognomy, 471
pulse, 461
senses, 474
skin, 460
strength, 473
thirst, 464
thoracic, 476
tongue and mouth, 464
urine, 468
vomiting, 466

Taste, sense of,
typhoid fever in, 69
yellow fever, 464
Temperature of surface,
bilious fever in, 355
congestive fever, 402
typhoid fever, 59

Temperature of surface—*continued.*
typhus fever, 202, 270
yellow fever, 460
Theory,
periodical fever, of, 425
typhoid fever, 159—166
typhus fever, 322
yellow fever, 550
Thirst,
bilious fever in, 362
congestive fever, 404
typhoid fever, 73
typhus fever, 204
yellow fever, 464
Thoracic symptoms,
bilious fever in, 357
typhoid fever, 62
typhus fever, 204
yellow fever, 476
Tinnitus aurium,
bilious fever in, 360
typhoid fever, 69
typhus fever, 212
yellow fever, 474
Tongue and mouth,
bilious fever in, 361
typhoid fever, 72, 141
typhus fever, 213, 269
yellow fever, 464
Tonics,
typhoid fever in, 173, 176, 180
typhus fever, 329
yellow fever, 558
Treatment of bilious fever, 429—433
bloodletting, 429
cinchona, 431
diaphoretics, 433
local bleeding, 430
purgatives, 431
refrigerants, 433
sulphate of quinine, 432
Treatment of congestive fever, 433—439
bleeding, 435
camphor, 434
capsicum, 434
cold dash, 435
heat, 434
opium, 434
stimuli, 434
sulphate of quinine, 434
Treatment of intermittent fever, 439
Treatment of typhoid fever, 167—187
Bouillaud's method, 182
Chomel's method, 174
De Laroque's method, 183
Dr. Jackson's method, 168
Louis's method, 179
miscellaneous, 184
Dr. N. Smith's method, 171
Treatment of typhus fever, 324—334
affusions and ablutions, 328
bleeding, 324
camphor, 332
diet, 334
miscellaneous, 331
opium, 332
Treatment of typhus fever—*continued.*
purgatives, 328
stimulants and tonics, 329
wine, 329
Treatment of yellow fever, 552—562
antiphlogistic, 555
bloodletting, 555
cinchona, 558
cold affusion, 557
conclusion, 561
mercurials, 553, 556
Mobile method, 559
preliminary, 552
prophylactics, 560
purgatives, 558
Spanish method, 558
stimulants, 558
tonics, 558
Trotter, Dr., 337
Tweedie, Dr., 283, 343
Twitching of tendons,
bilious fever in, 360
typhoid fever, 69, 141
typhus fever, 213
Type of periodical fever, 352—355, 399
yellow fever of, 533
Tympanites, 77, 363
Typhoid fever, 49, 194
Typhoid entero-mesenteritis, 50
Typhoid state, 156
Typhus fever, 197—344

Ulceration,
epiglottis of, 89
isolated follicles, 99, 100
Peyer's glands, 94
stomach, 91
Unity of disease, 533
Urinary organs, lesions of,
periodical fever in, 383
typhoid fever, 103
typhus fever, 235
yellow fever, 491
Urine, retention of,
typhoid fever in, 143
typhus fever, 217
yellow fever, 468
Urine, state of,
bilious fever in, 365
typhoid fever, 78
typhus fever, 217
yellow fever, 468

Varieties of congestive fever, 400—405
algid, 402
comatose, 400
delirious, 401
gastro-enteritic, 404
Varieties of periodical fever, 397—407
Varieties of typhoid fever, 129—133
adynamic, 132
ataxic, 132
bilious, 132
inflammatory, 132
latent, 130
mucous, 132

Varieties of typhus fever, 255
Varieties of yellow fever,
congestive, 474, 530, 531
inflammatory, 474, 530, 531
mild, 529
places, in different, 528
remittent, 534, 535
seasons, 528
Vaughan, Dr., 284
Vegetable decomposition, 393, 513
Vigilance,
typhoid fever in, 68
Vision, state of,
typhoid fever in, 69
typhus fever, 212
yellow fever, 474
Vomiting,
bilious fever in, 363
typhoid fever, 73
typhus fever, 214
yellow fever, 466
Vomit, black, 466

Walcheren fever, 349
Walking cases of yellow fever, 473, 530
Ware, Dr., 54
Washington, yellow fever at, 523
Weather, influence of,
periodical fever on, 389
typhoid fever, 144
typhus fever, 243
yellow fever, 500
Wharton, Dr., 434
Willan, Dr., 287
Wilson, Dr. J., 472, 531, 577
Wine,
typhoid fever, 171, 177
typhus fever, 329
Woodville, yellow fever at, 507, 512, 580
Wooten, Dr., 109, 117, 152, 395

Yellow fever, 457—581
Yellowness of skin,
bilious fever in, 356
typhus fever, 257
yellow fever, 474, 491, 493

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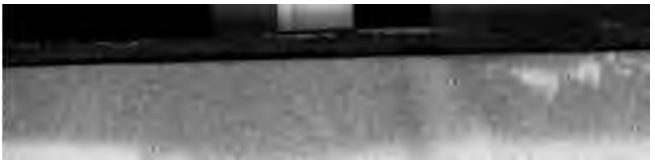
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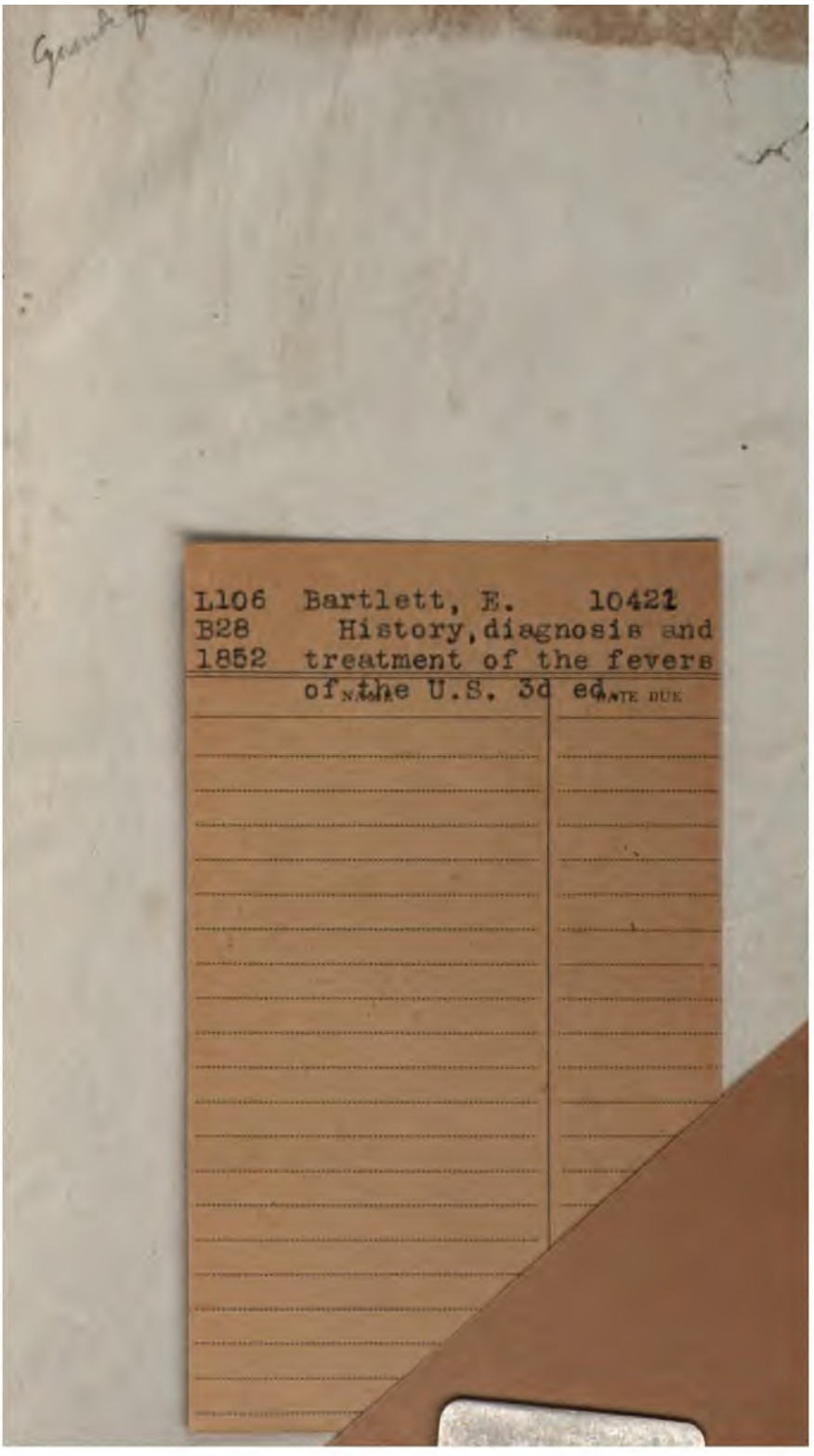
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